VERGENNES PLANNING AND ENVIRONMENT LINKAGES (PEL) STUDY

Purpose and Need Technical Memorandum

DRAFT

February 2022

VERMONT
AGENCY OF TRANSPORTATION

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Acronyms

AADT ..... Average Annual Daily Traffic
ACRPC ..... Addison County Regional Planning Commission
ACS ..... American Community Survey
dBA ..... decibel
EJ ..... environmental justice
FHWA ..... Federal Highway Administration
FTA ..... Federal Transit Administration
LOS ..... level of service
Leq ..... equivalent sound level
MUTCD ..... Manual on Uniform Traffic Control Devices
NAC ..... noise abatement criteria
NEPA ..... National Environmental Policy Act
NO_2 ..... Nitrogen Dioxide
PEL ..... Planning and Environment Linkages
PM ..... particulate matter
RRFB ..... Rectangular Rapid Flashing Beacons
VdB ..... vibration velocity
VTrans ..... Vermont Agency of Transportation

Executive Summary

The Vermont Agency of Transportation (VTrans), in cooperation with the Federal Highway Administration (FHWA), is preparing a Planning and Environment Linkages Study (Vergennes PEL Study) to evaluate transportation alternatives to reduce the impacts of large trucks on VT Route 22A (Route 22A) in downtown Vergennes, while also enhancing the quality of life and economic vitality for residents in the city and surrounding towns. The Vergennes PEL Study will build upon previous planning efforts completed over the last twenty-five years that considered alternatives in different levels of detail. Improvements to the transportation system that could be constructed as a result of the PEL study would be supported with federal transportation funding and therefore, would require approval by FHWA under the National Environmental Policy Act (NEPA).

This document outlines the purpose and need for the Vergennes PEL Study. The purpose and need establishes the foundation for the study and supports the alternatives development, refinement, and analysis. This document details the scope and context of the Route 22A corridor and the study area, summarizes the previous studies conducted for the Route 22A corridor, identifies the purpose and needs, provides quantitative and qualitative data that support the needs and key issues to be addressed, and details the next steps that will follow as the study continues.

STUDY AREA CONTEXT

Route 22A is a 44-mile-long predominantly state-owned minor arterial roadway in western Vermont that is a primary economic corridor within the region. Route 22A provides the most direct route for traffic along Vermont's western border, linking northern Vermont with points south and west, including New York. Route 22A passes through downtown Vergennes, an important economic center for the region. The high volume of large trucks within downtown Vergennes, is a visible presence, and negatively impacts the local community.

While the focus of the Vergennes PEL Study is to reduce the impacts of large trucks on Route 22A in downtown Vergennes, a larger study area has been defined to encompass the surrounding towns and major U.S./State highways in Addison County that may be affected by possible solutions. In addition to the City of Vergennes, the study area encompasses six other municipalities: the towns of Ferrisburgh, New Haven, Panton, Waltham, Addison, and Weybridge. The surrounding communities are predominantly agricultural/rural in context.

OUTREACH AND DATA COLLECTION

Outreach to communities with the potential to be affected by project alternatives is necessary to achieve regional consensus that will allow a future project to successfully compete for upcoming transportation funding opportunities. The PEL process is intended to streamline the planning process, shorten timelines in the NEPA process and reduce overall costs. As such, the Vergennes PEL Study includes an inclusive and expanded outreach program. Ensuring adequate time to build regional consensus on how future alternatives could impact social, cultural and community resources in the study area will result in stronger working relationships between local government, agencies, and transportation departments. Individual outreach activities that have occurred to date have provided local insight on the purpose and need statement, including City Council and Selectboard meetings, a public meeting, focus group meetings, and one-on-one interviews.

In addition to the public outreach efforts, data were collected to support the development of the purpose and need statement. These data collection efforts include a survey to the trucking industry, noise and vibration monitoring, and traffic counts.

PURPOSE AND NEED

One of the first major steps in the Planning and Environment Linkages process is to develop a purpose and need statement. A purpose and need statement is an important component of PEL studies and environmental reviews prepared by VTrans, as it sets the stage for the specific problems to be addressed. The ***purpose*** defines the transportation problem to be solved. The ***need*** provides evidence that supports the assertion made in the purpose. The purpose and need statement developed for this PEL study builds upon the purpose and need from the 2019 VT 22A Alternative Truck Route Study and reflects extensive public outreach and data collection efforts described in Section 3.

The ***purpose*** is to reduce the impacts of through truck traffic, including safety, congestion, noise, vibration, and dust on Route 22A in downtown Vergennes. Transportation solutions that reduce truck related quality of life impacts should also meet the mobility, safety, and economic vitality needs of Vergennes and the neighboring communities. A summary of the ***needs*** identified are detailed below.

	**Mobility and Access**: Maintain opportunities for the movement of freight in the region and minimize and/or mitigate traffic impacts to other transportation corridors.

	**Safety, Circulation, and Resilience:** Support the continued movement, resilience and safety of travel through downtown Vergennes and in the neighboring communities.
	**Quality of Life:** Improve the quality of life and minimize negative property and environmental resource impacts in downtown Vergennes and neighboring communities.
	**Economic Vitality:** Promote economic vitality of downtown Vergennes, goods movement in Vergennes and neighboring communities, and support rural economy.
	**Land Use:** Support local and regional land use plans and policies and state land use goals.

NEXT STEPS

The purpose and need statement outlined in this document will be used to identity an initial long list of alternatives, including potential alternatives from previous studies, concepts suggested by the public in prior outreach efforts, and public/agency suggestions on alternatives for the current study. The initial alternatives will be screened by criteria to be developed through an open and transparent public process to a short list of alternatives that will be developed in further detail. Two state and federal resource agency concurrence points have been identified – the purpose and need statement and the screening of the initial alternatives. The alternatives development and screening process during this PEL study will help identify recommended and feasible options, which can move forward to conceptual design ahead of initiating a NEPA review.

1. Introduction

The Vermont Agency of Transportation (VTrans), in cooperation with the Federal Highway Administration (FHWA), is preparing a Planning and Environment Linkages Study (Vergennes PEL Study) to evaluate transportation alternatives to reduce the impacts of large trucks on VT Route 22A (Route 22A) in downtown Vergennes, while also enhancing the quality of life and economic vitality for residents in the city and surrounding towns. The Vergennes PEL Study will build upon previous planning efforts completed over the last twenty-five years that considered alternatives at different levels of detail. Improvements to the transportation system that could be constructed as a result of the PEL study would be supported with federal transportation funding and therefore, would require approval by FHWA under the National Environmental Policy Act (NEPA).

See the Vergennes Planning and Environment Linkages Study website (www.vergennespel.com) for additional information and future reports.

Two of the primary outcomes of the PEL process will be the preparation and federal and state resource agency concurrence of a purpose and need statement and the identification of a list of reasonable transportation alternatives that may move forward for evaluation in a future NEPA environmental review. NEPA compliance is required whenever a federal agency proposes an action, grants a permit, or agrees to fund or authorize any other entity to undertake an action that has the potential to affect environmental resources. Another important outcome will be coordination of reasonable transportation alternatives with local land use planning; the result of which would be advanced through separate environmental reviews. The Vergennes PEL Study will also include an implementation plan, including next steps for the future NEPA environmental review, local land use planning recommendations, and an identification of project financing strategies.

This document outlines the purpose and need for the Vergennes PEL Study. The purpose and need establishes the foundation for the study and supports the alternatives development, refinement, and analysis. This purpose and need document details the scope and context of the Route 22A corridor and the study area, summarizes the previous studies conducted for the Route 22A corridor, identifies the purpose and needs, provides quantitative and qualitative data that support the needs and key issues to be addressed, and details the next steps that will follow as the study continues.

What is a Planning and Environment Linkages Study (PEL)?

The Planning and Environment Linkages (PEL) study process was created by FHWA to support a collaborative and integrated approach to transportation decision making. A PEL study allows a transportation agency to adopt or incorporate directly, or by reference, products, analyses, and decisions developed during a planning study into subsequent NEPA documents when certain conditions are met.

The PEL process considers the benefits and impacts of proposed transportation systems on the community, economy, and environment. This can significantly reduce the amount of time that it takes to complete the NEPA review process and advance a project towards implementation. This is attributed to the early identification of stakeholders, engagement with non-transportation agency decision makers, and leveraging relationships among agencies and the public. PEL studies are recommended when projects are regionally significant, need to respond to community context, are likely to have environmental constraints, are likely to be costly, or may be controversial.

2. Study Area Context

This section defines the Route 22A corridor within the City of Vergennes, and the context of downtown Vergennes. While the focus of the Vergennes PEL Study is to reduce the impacts of large trucks on Route 22A in downtown Vergennes, a larger study area, as described in Section 2.3 has been defined to encompass the surrounding towns and major U.S./State highways in Addison County.

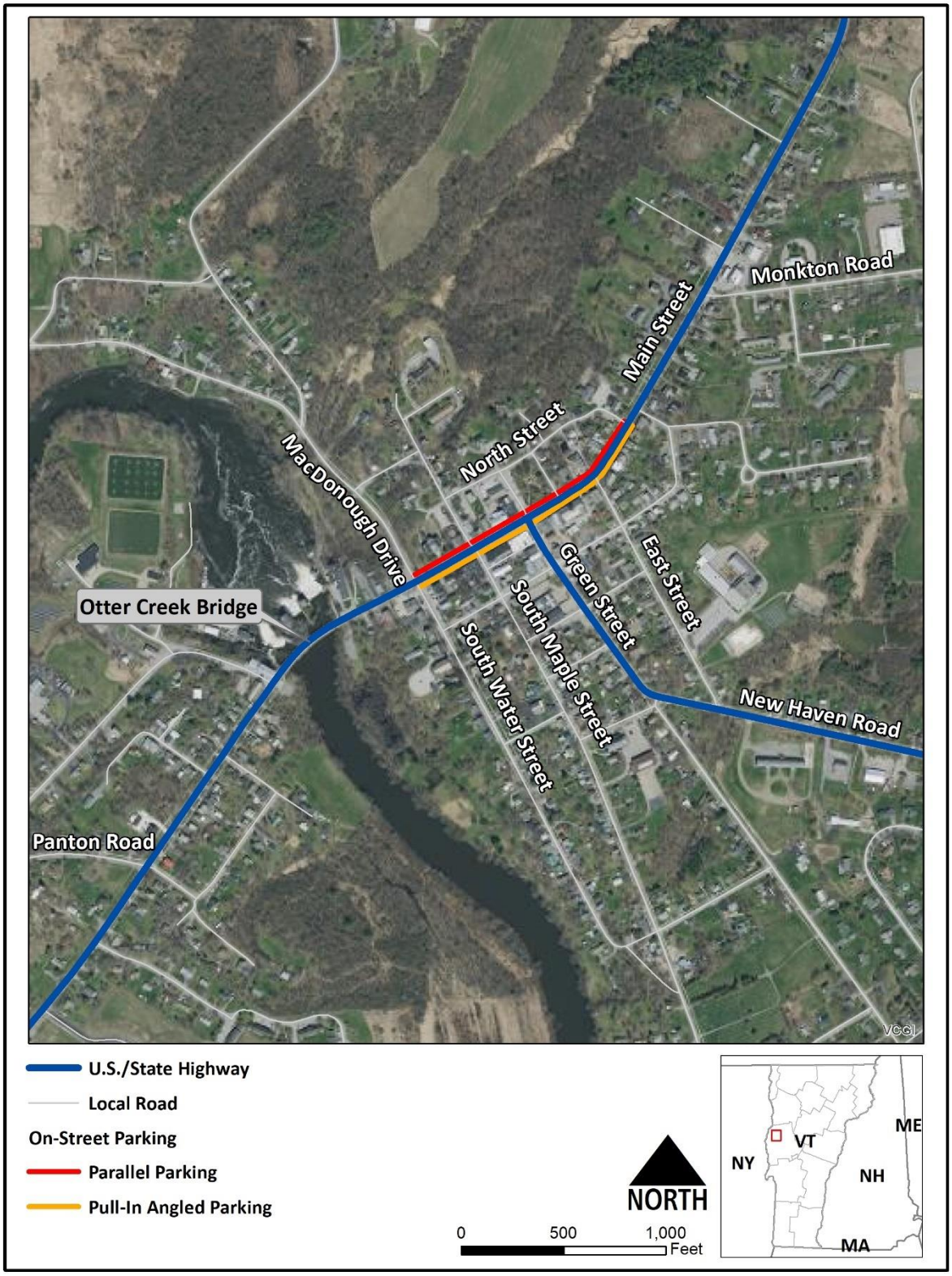
2.1 ROUTE 22A CORRIDOR

Route 22A is a 44-mile-long state-owned minor arterial roadway in western Vermont that is a primary economic corridor within the region. It is the northeastward continuation of New York Route 22A. Its southern end is at the New York state line in Fair Haven and its northern end is in Ferrisburgh at U.S. Route 7. Route 22A is a two-lane roadway with widths that vary between 24 and 39 feet with the widest segments located north of the Otter Creek Bridge in the City of Vergennes.

An approximately 2.2-mile section of Route 22A travels through downtown Vergennes (Figure 2-1). The remaining portions of Route 22A, outside of the City of Vergennes, are primarily rural in context. The speed limit along Route 22A is closely aligned with the adjacent roadway contexts, with posted speed limits of 25 or 30 miles per hour within densely developed Vergennes, and 40 or 50 miles per hour through the rural southern section of the corridor in Panton and Addison. The section of Route 22A within Vergennes is a Class 1 town highway under City jurisdiction, while the remainder of the Route 22A corridor falls under VTrans jurisdiction. Within Vergennes, there is one primary structure along Route 22A, a 338-foot city-owned bridge over Otter Creek that was reconstructed in 1969. At last inspection in 2019, the bridge received ratings between satisfactory and fair for all categories and there are no posted weight or size restrictions.

Entering Route 22A from the north (Ferrisburgh), the roadway within Vergennes exhibits a slight grade. However, there is a significant grade (approximately 11%) that occurs at the southern end of downtown, from south of the intersection of Main Street and South Maple Street, extending to the Otter Creek Bridge. There is on-street parking on both sides of the street between Water Street/McDonough Drive and North Street, with parallel parking adjacent to the southbound travel lane and pull-in angle parking adjacent to the northbound travel lane.

Figure 2-1: Route 22A in Downtown Vergennes



As a primary south-north corridor within Addison County, Route 22A is currently heavily utilized by truck freight operations. Route 22A provides the most direct route for traffic along Vermont's western border, linking northern Vermont with points south and west, including New York. Route 22A passes through downtown Vergennes, an important economic center for the region. Within downtown Vergennes, large truck[1] traffic is a visible presence, and impacts the local community (Figure 2-2).

Figure 2-2: Truck Traffic in Downtown Vergennes

2.2 CITY OF VERGENNES

The City of Vergennes is Vermont's first incorporated city and is currently the smallest city, by population, within the state. The city is 2.5 square miles in size and is walkable and compact with many linked destinations connected by its sidewalk network. Vergennes is a tourist destination because of its natural features, including Otter Creek and Vergennes Falls (Figure 2-3), as well as its downtown commercial core of architecturally distinct storefronts and independent retailers. Additionally, Vergennes has regionally significant destinations, including the Vergennes Opera House, City Park, and Falls Park. It is one of 23 municipalities enrolled in the Vermont downtown Program that helps support community revitalization while preserving the historic character and enhancing the future of medium to large-sized historic centers. Route 22A runs through the Vergennes Historic District, which has been listed on the National Register of Historic Places since 1976.

[1] For the purpose of this study, a "large truck" is defined as any vehicle with four or more axles, representing FHWA Vehicle Classes 7 through 13. (https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/vehicle-types.cfm)

Vergennes has retained much of the architecture and character from its 19th century development and its manufacturing and mercantile history. In recent years, the city has benefited from revitalization within the downtown and former industrial zones. Specifically, the retail and food service industries have been central to growth within Vergennes.

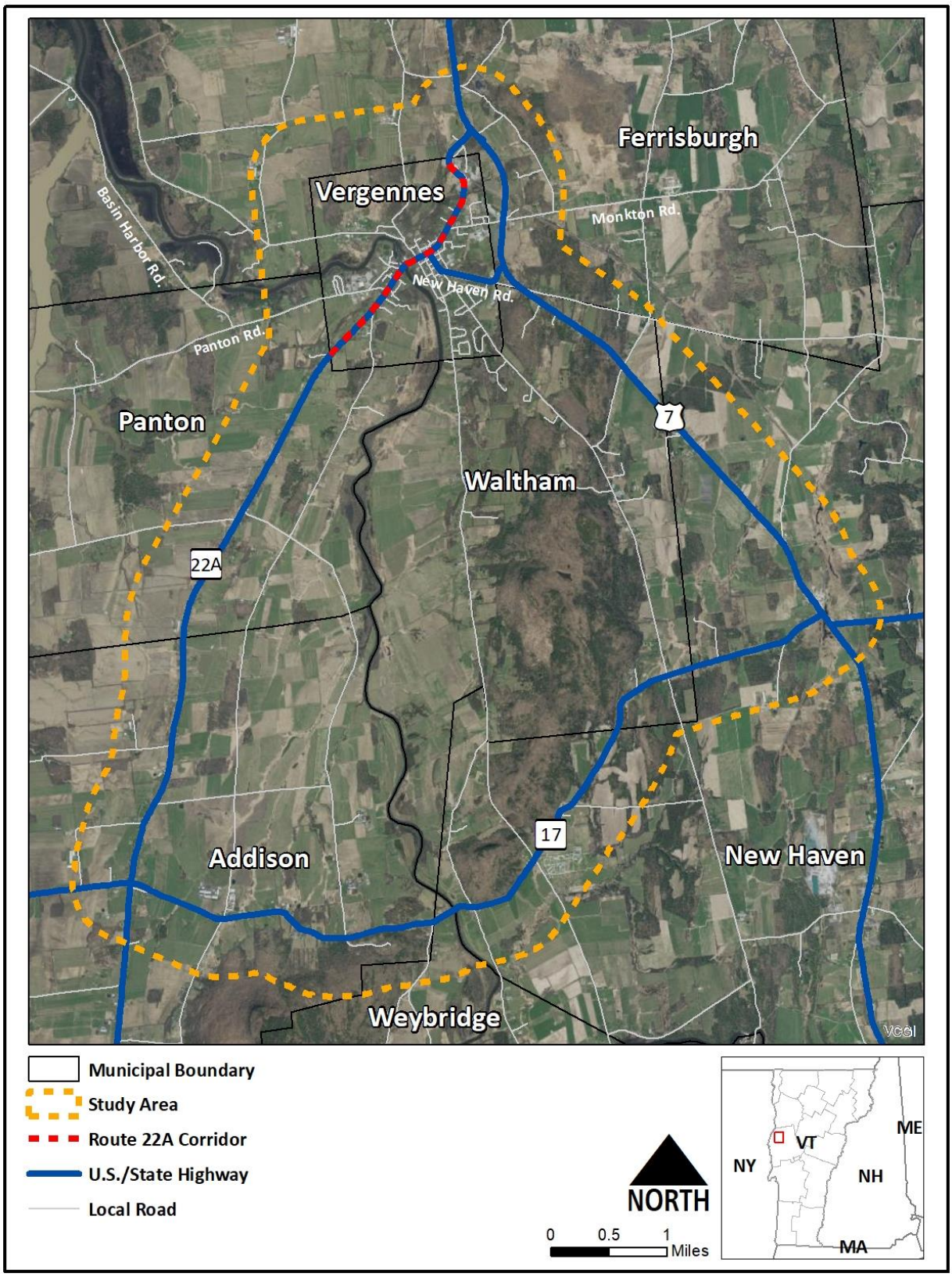
While Vergennes is a year-round destination, the city experiences peak tourism during the summer months because of its location within the Lake Champlain Byway and proximity to several state parks. Travelers typically visit for outdoor recreational activities as well as seasonal fairs and events such as Vergennes Day or Vergennes City Band concerts.

Figure 2-3: Vergennes Falls

2.3 STUDY AREA

The focus of the Vergennes PEL Study is to reduce the impacts of large trucks on Route 22A in downtown Vergennes. However, a larger study area, that incorporates the neighboring towns was identified to serve as the area of potential impacts and opportunities for future alternative solutions. The study area includes the triangular-shaped area bounded by Route 22A from U.S. Route 7 in the town of Ferrisburgh to VT Route 17 (Route 17) in the town of Addison, Route 17 from Route 22A to U.S. Route 7 in the town of New Haven, and U.S. Route 7 from the intersections with Route 17 to the intersection with Route 22A and extends approximately one-half mile beyond these roadways (Figure 2-4). Alternatives identified through the PEL study could extend beyond this study area (e.g., Interstate 87 in NY and US Route 4, rail, and water freight). As such, this study area may be refined in the future for any reasonable transportation alternatives that move forward for evaluation in a future NEPA environmental review.

Figure 2-4: Route 22A Corridor and Study Area



In addition to the City of Vergennes, the study area encompasses six other municipalities: the towns of Ferrisburgh, New Haven, Panton, Waltham, Addison, and Weybridge. The surrounding communities are predominantly agricultural and rural in context (Figure 2-5), and except for Weybridge, they are bisected either by Route 22A or U.S. Route 7. Within the study area, low-density residential and agriculture are the predominant land use types adjacent to Route 22A, Route 17, and U.S. Route 7.

Figure 2-5: Rural context surrounding Route 22A and Downtown Vergennes

2.3.1 Environment

Natural resources are essential to Addison County and the study area. They influence the cultural, social, and environmental landscape of the region and offer economic value, scenic beauty and recreational opportunities. The Addison County Regional Planning Commission (ACRPC) has adopted natural resource goals and policies in its Regional Plan[2] and collaborates with the Vermont Agency of Natural Resources and community groups to develop plans and guidelines for resource use. Resources include water, agricultural soils, wetlands, wildlife habitat, and forests.

The study area is contained within the Otter Creek Basin, the second largest watershed in Vermont, draining an area of approximately 936 square miles. Most of the sub-basins in Addison County flow into Otter Creek, which flows into Lake Champlain, but there are also several sub-basins in the region that drain directly to Lake Champlain.

[2] ACRPC Regional Plan: https://acrpc.org/wp-content/uploads/2021/03/Regional_Plan_7_18_2018_updated_5_2019.pdf

Agriculture is a driving economic and cultural force in the study area and plays an important role in land-use, social, and community patterns. Historically, the building of the regional highways divided farms leaving some lands abandoned. Today, larger intact parcels of farming land are highly coveted.

The protection of wetlands is essential to maintain the ecological and socio-economic functions they serve. Wetlands provide habitat for a wide variety of plants and animals, including threatened and endangered species. Wetlands comprise a significant portion of farmland in Addison County which has a high proportion of clay soils. Many wetland areas have been altered to support land development or agriculture. Additionally, excessive runoff from agriculture activities may cause siltation or result in impacts to surrounding wetlands from excessive nutrients and/or pesticides.

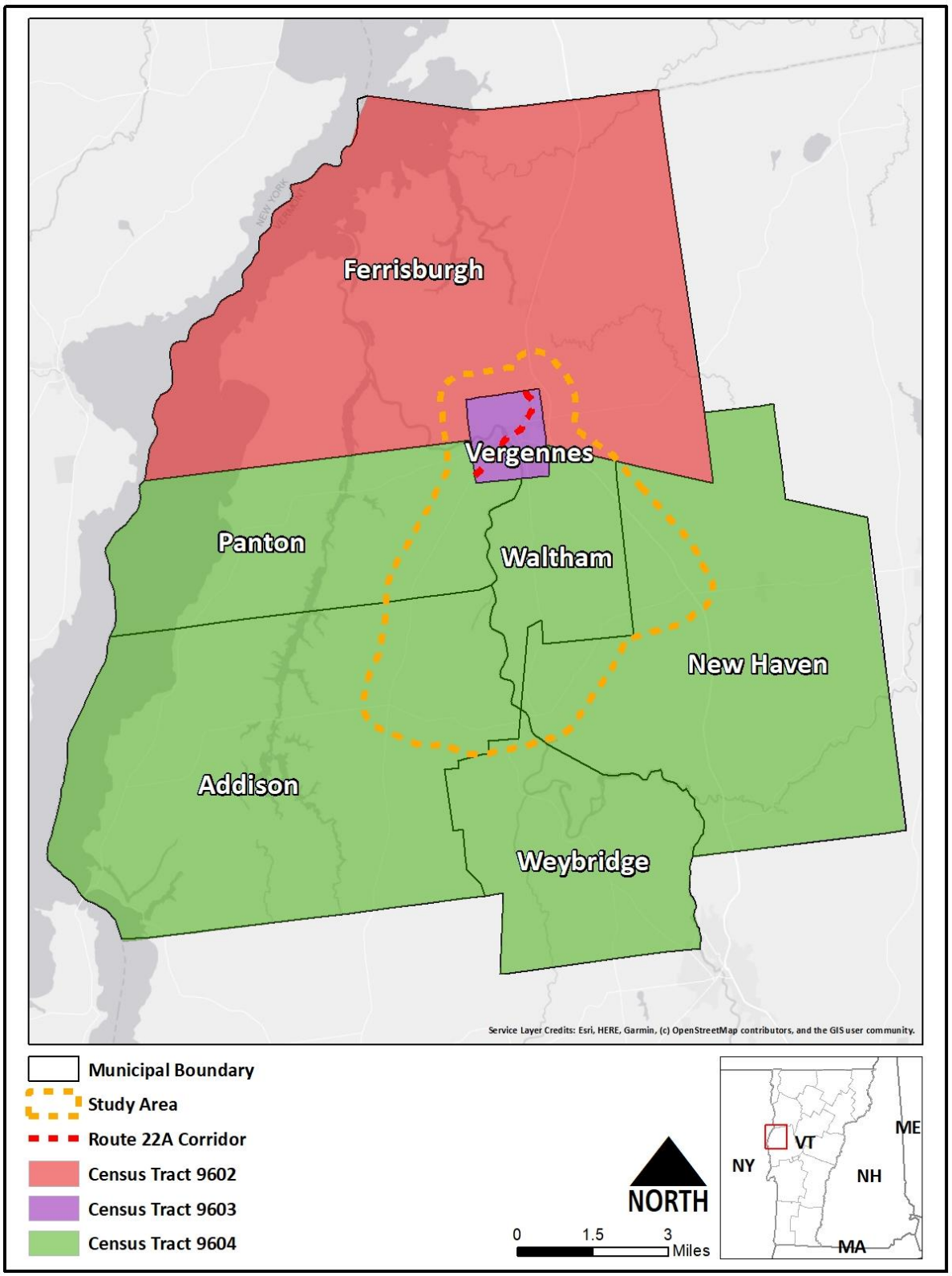
According to the ACRPC, more than half of Addison County's landscape is forested, due to the large agricultural land base that largely surrounds the City of Vergennes. The study area's remaining forests and the resources and services they provide are essential to the high quality of life enjoyed by residents of the area. The environmental focus group (described in section 3.3) confirmed the significant public investment in land conservation within the study area. Use of certain federal funds for land preservation also protect lands from possible eminent domain for transportation projects. In addition, Act 250 provides a public, quasi-judicial process for reviewing and managing the environmental, social, and fiscal consequences of major subdivisions and developments in Vermont.

In addition to natural resources, the Addison Region has a wide range of archeological, historic and cultural resources. According to the ACRPC, there are approximately 60 buildings or sites within the region listed on the National Register of Historic Places and three historic districts in Bristol, Middlebury and Vergennes are also nationally recognized.

2.3.2 Demographics

United States Census Bureau American Community Survey (ACS) 5-Year estimates data were collected for the Addison County, the City of Vergennes, and the towns of Addison, Panton, New Haven, Waltham, and Weybridge and the census tracts that are located wholly or partially within the study area The demographic study area includes three Census tracts (9602, 9603, and 9604), as shown in Figure 2-6. This demographic review is focused on understanding the context and makeup of the communities surrounding the Route 22A corridor. Census Tract 9602 encompasses the town of Ferrisburgh, Census Tract 9603 encompasses the City of Vergennes, and Census Tract 9604 encompasses the towns of Panton, Waltham, New Haven, Weybridge, and Addison.

Figure 2-6: Study Area Census Tracts



Source: U.S. Census Bureau – American Community Survey 5-Year Estimates, State of Vermont – Vermont Open Data Portal

Table 2-1 presents population for the demographic study area, based on the 2000, 2010, and 2020 decennial censuses. Population has remained relatively consistent across the study area, as well as countywide and statewide; however, the study area saw an overall decline, compared to the growth county- and state-wide. The towns of Panton, Ferrisburgh, and Waltham experienced population declines greater than 4 percent between 2010 and 2020.

Table 2-1: Demographic Study Area Population, 2000, 2010, and 2020

	2000	2010	PERCENT CHANGE (2000-2010)	2020	PERCENT CHANGE (2010-2020)
City of Vergennes	2,741	2,588	-5.58%	2,553	-1.35%
Town of Addison	1,393	1,371	-1.58%	1,365	-0.44%
Town of Ferrisburgh	2,657	2,775	4.44%	2,646	-4.65%
Town of New Haven	1,666	1,727	3.66%	1,683	-2.55%
Town of Panton	682	677	-0.73%	646	-4.58%
Town of Waltham	479	486	1.46%	446	-8.23%
Town of Weybridge	824	833	1.09%	814	-2.28%
Demographic Study Area	10,442	10,457	0.15%	10,153	-2.91%
Addison County	35,974	36,821	2.35%	37,363	1.47%
Vermont	608,827	625,741	2.78%	643,077	2.77%

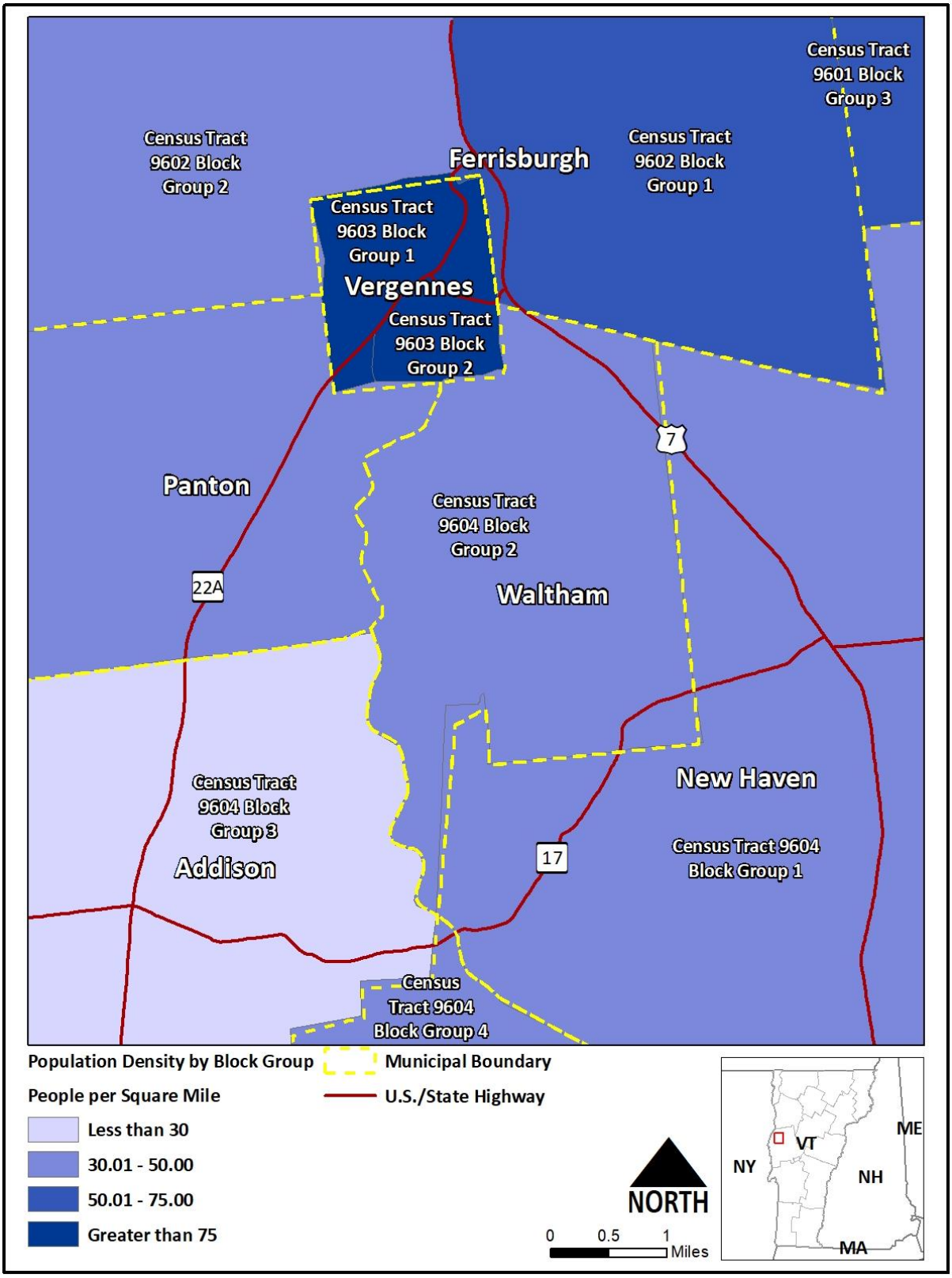
Source: U.S. Census Bureau Decennial Census,

Figure 2-7 presents population density for the demographic study area. Due to its relatively small geographic size, the two block groups within the City of Vergennes (Census Tract 9603, Block Groups 1 and 2) had the highest population densities (638 and 1,528 people per square mile, respectively), followed by the easternmost Block Group in Town of Ferrisburgh (Census Tract 9602, Block Group 1). The Town of Addison, represented by Census Tract 9604, Block Group 3, has the lowest population density (28 people per square mile). The remaining towns in the study area have a population density ranging between 30 and 55 persons per square mile.

Table 2-2 presents the total population for each of the census tracts in the demographic study area as well as populations classified as vulnerable populations, including children, older populations, persons living with a disability, and those who are foreign born.[3] Table 2-2 also presents census data pertaining to environmental justice (EJ) populations, including those that are low-income, exhibit limited English proficiency, or are predominantly racial or ethnic minority communities. Census tracts with a population group that are more than 10 percent higher than the Addison County percentage are highlighted in blue, indicating a greater potential for EJ populations.

[3] These groups have historically been less involved within traditional planning processes and/or face challenges when participating in public outreach due to barriers specific to each.

Figure 2-7: Population Density – Demographic Study Area, 2019



Source: U.S. Census Bureau – American Community Survey 5-Year Estimates, State of Vermont – Vermont Open Data Portal

Table 2-2: Vulnerable Population – Demographic Study Area, 2019

	CENSUS TRACT 9602 (FERRISBURGH)	CENSUS TRACT 9603 (VERGENNES)	CENSUS TRACT 9604 (OTHER TOWNS)	ADDISON COUNTY	VERMONT STATE
Total Population	2,725	2,596	5,084	36,882	624,313
Percent of Population Aged 65+	18.79%	16.02%	20.52%	19.2%	18.8%
Percent of Population Under 18 years old	14.75%	18.41%	17.29%	17.2%	18.7%
Percent of Population Under 5 years old	3.93%	2.81%	4.92%	4.1%	4.7%
Percent of Population Living with a Disability	13.4%	16.4%	13.6%	13.4%	14.5%
Percent of Population that is Foreign Born	3.56%	4.89%	4.98%	4.8%	4.7%
Percent of Population Living Below the Poverty Level	4.92%	10.82%	4.92%	7.2%	10.9%
Percent of Population who Identify as Non-White	2.57%	2.20%	2.58%	4.4%	3.9%
Percent of Population with Limited English Proficiency	1.8%	0.0%	0.1%	1.1%	1.5%
Percent of Population with No Vehicle Access	1.0%	3.6%	1.5%	4.2%	6.9%

Source: U.S. Census Bureau American Community Survey 5-Year Estimates

As illustrated in Table 2-2 , Census Tract 9603 (the City of Vergennes) exhibits two population groups with a substantially higher percentage when compared to the total of Addison County. Within the City of Vergennes, residents living with a disability or those living below the poverty level are higher than typical communities within Addison County. This indicates that the review of potential alternatives should take into consideration the benefits or burdens to these underserved communities.

Census Tract 9604 (other towns) exhibited the highest percentage of total population that is aged 65 or older, with over one-fifth of the population contained within this category. This tract also held the highest proportion of the population aged 5 years or younger, with a total of nearly 5%. Census Tract 9604 includes the highest proportion of the population living with a disability, with approximately 16% of the population. This includes those with hearing, ambulatory, self-care, and independent living difficulties.

Table 2-2 also presents the percentage of population without access to a personal vehicle. Most of the population of the demographic study area has access to at least one personal vehicle. Census Tract 9603 (Vergennes) exhibited the highest percentage of those who do not have access to a vehicle (3.6%), a percentage that is lower compared to Addison County and the state of Vermont.

Workplace commuting patterns are summarized in Table 2-3. Across all demographic study area census tracts, most workers commute to their place of employment via personal vehicle, driving alone. Smaller percentages work from home or carpool, the latter of which is higher than the county and statewide percentages.

Table 2-3: Mobility Factors – Demographic Study Area, Addison County, Vermont, 2019

WORK COMMUTE CHARACTERISTICS	CENSUS TRACT 9602 (FERRISBURGH)	CENSUS TRACT 9603 (VERGENNES)	CENSUS TRACT 9604 (OTHER TOWNS)	ADDISON COUNTY	VERMONT STATE
Drove Alone	77.7%	80.1%	78.8%	73.1%	75.9%
Carpooled	9.9%	9.5%	5.9%	7.3%	8.7%
Public Transportation	0.0%	1.0%	0.4%	0.5%	1.3%
Walked	1.2%	6.7%	2.5%	7.4%	5.6%
Bicycle	0.0%	0.0%	0.1%	Data not available	Data not available
Other	1.9%	0.0%	0.4%	1.4%	1.8%
Worked From Home	9.4%	2.0%	10.8%	10.3%	6.8%

Source: U.S. Census Bureau American Community Survey 5-Year Estimates

The census data provided in Table 2-3 predates the COVID-19 pandemic and may not accurately reflect shifts in workforce commuting patterns. While relatively few workers in the demographic study area reported using bicycles or public transportation, nearly 7% of workers in Vergennes (Census Tract 9603) reported walking to work, which is above the statewide percentage. This highlights the importance of walkability within the City of Vergennes not only for recreational opportunities, but as a necessity to access workers' place of employment.

2.4 PREVIOUS STUDIES

The Route 22A corridor has been the subject of several previous studies. The Vergennes PEL Study will build upon the previous studies, with a reinvigorated focus on inclusive and visible outreach as well as a focus on existing and future land uses. This section summaries the previous studies conducted for Route 22A.

2.4.1 Vergennes Route 22A Bypass Preliminary Design Report (1995)

Initiated by the ACRPC, the 1995 Vergennes Route 22A Bypass Preliminary Design Report[4] reviewed feasible options for a bypass around downtown Vergennes. The study followed previously completed efforts that recommended consideration of a bypass including 1) the Route 7 Corridor Transportation Study (1994), 2) the Addison County Long-Range Regional Transportation Plan (1994), and 3) a 1989 survey of Vergennes voters in which 89% of respondents supported the idea of a bypass. The study identified three potential corridors for a proposed bypass including:

[4] Vergennes Route 22A Bypass, Preliminary Design Report (1995): https://vergennespel.com/media/phwk50ya/vergennes_22a_-bypass-1995.pdf

- Corridor A: a 4.6-to-5.4-mile corridor extending through Panton and Ferrisburgh
- Corridor B: a 2.9-mile corridor within Panton and Vergennes (or, alternatively, only Vergennes)
- Corridor C: a 2.4-mile corridor extending through Panton, Waltham, and Vergennes

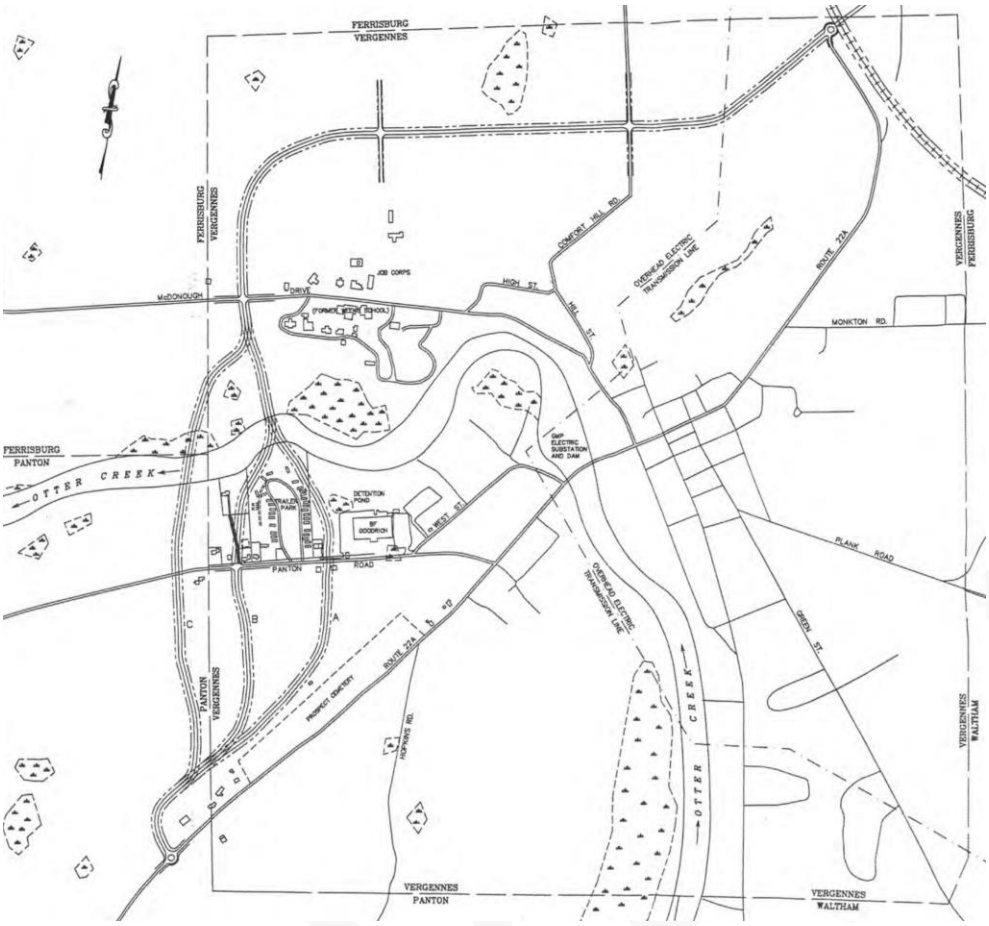
Corridor B was selected as the preferred alternative, and several options for conceptual alignments along this corridor were investigated. All three options included identical alignments until their intersection with MacDonough Drive, beginning at Route 22A at the Vergennes Town Line west to Comfort Hill Road, ultimately turning south, intersecting with MacDonough Drive. From here the options differed, including:

- Option A: South to Otter Creek with a new proposed crossing, south through a portion of the existing trailer park and other private property, following an existing drainage basin to Panton Road, ultimately continuing south where it would reconnect with Route 22A in Panton, just southwest of the municipal boundary.
- Option B (Figure 2-8): The proposed route would run similarly to Option A, but would divert west, south of the new Otter Creek crossing.
- Option C: This proposed route would veer further west than options A and B, just south of the MacDonough Drive intersection, crossing Otter Creek in Panton, and continuing south allowing the design to take advantage of open space in the area.

The study recommended that roundabouts be utilized at both the northern and southern termini of the bypass at the connection to Route 22A. However, a preferred option for Corridor B was not determined as part of this study, see figure below.

The study also investigated the potential for associated improvements with the construction of a bypass, highlighting several development scenarios that could occur including scenarios that included rural residential, higher density residential, recreational, industrial, or mixed-use opportunities.

Figure 2-8: Corridor B Options, 1995 Bypass Study



2.4.2 Greater Vergennes Traffic Impact Feasibility Study (2002)

Following the completion of the 1995 Preliminary Design Report, which analyzed potential alternatives for a bypass to divert truck traffic around downtown Vergennes, public feedback differed greatly between residents of Vergennes and surrounding communities. While most residents in Vergennes supported the development of a bypass, residents in surrounding communities voiced concerns that any bypass would have negative effects on the quality of life in their communities. As such, the ACRPC initiated a series of public workshops to determine major issues, concerns, and feasible alternatives, the results of which were summarized as the 2002 Feasibility Study.[5]

Community concerns related to the bypass were centered on several elements, including the design/impact/cost of the bypass, truck traffic, environmental concerns, land uses (illustrated in Figure 2-9), economic issues, safety, impacts to access and safety for people using bicycles or walking, and others. ACRPC considered several methods that, either alone or combined, could

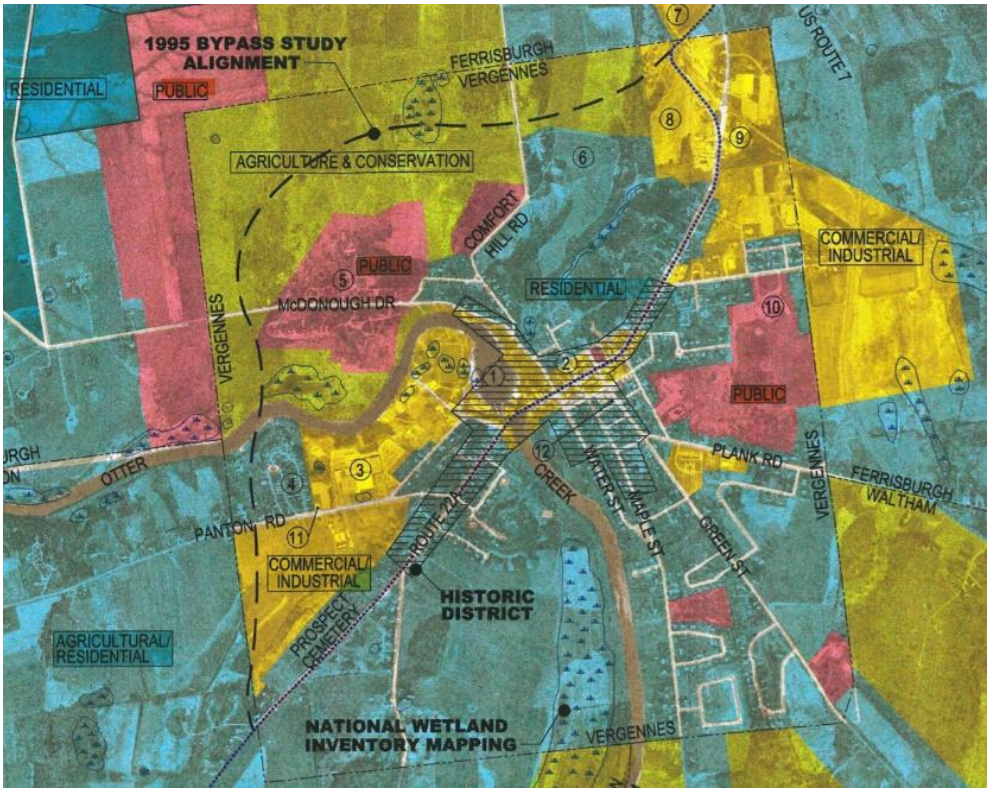
[5] Greater Vergennes Traffic Impact Feasibility Study (2002): https://acrpc.org/wp-content/uploads/2021/04/VERG_TrafficImpact_200207.pdf

address community concerns. The four designated solution areas discussed at the public meetings included:

- Bypass route around Vergennes
- Alternative routes for truck traffic
- Alternative transportation systems (Intelligent Transportation Systems, enforcement, and traffic calming)
- Improvements to downtown Vergennes

Ultimately the study recommended removal of truck traffic through downtown Vergennes with mandatory compliance by all truck drivers. It indicated that Corridor B remained the preferred alignment, as designated in the previous study, with modifications (particularly regarding bridge location) to be considered, as well as an emphasis on Route 17 improvements as an appropriate alternative.

Figure 2-9: Land Use Review, 2002 Study



2.4.3 Route 22A Truck Route Study (2019)

The 2019 study[6] led by ACPRC in partnership with VTrans in response to renewed interest in addressing the truck issue. A major outcome of this effort was the development of a purpose and need statement, which ultimately serves as the starting point for the Vergennes PEL Study.

2019 Purpose and Need Statement

Enhance the economic vitality and quality of life in downtown Vergennes by reducing the noise, vibration, fume, and dust impacts of truck traffic while:

- Maintaining a high level of service for the movement of freight in the region
- Minimizing and/or mitigating traffic impacts to other transportation corridors
- Minimizing property and environmental resource impacts in neighboring communities
- Supporting the continued movement of non-truck traffic through downtown Vergennes
- Providing a cost-effective use of resources.

In addition to the development of a purpose and need statement, the study resulted in the evaluation of three alternatives:

- Alternative A (Figure 2-10) – In Line Alternative: Route 22A would remain as the principal north/south truck route, however modifications would be made to provide for safer pedestrian and bicycle movements and smoother truck operations with fewer vehicle starts and stops.
- Alternative B (Figure 2-11) – New Alignment Alternative (Truck Bypass): Construction of a new bypass road combined with a restriction on truck traffic through downtown Vergennes. A separate "Induced Development" Alternative B investigated potential traffic impacts associated with development along the bypass.
- Alternative C –Route 17 Truck Route: This alternative would restrict truck trips through Vergennes, directing those vehicles to U.S. Route 7 and Route 17 to travel between Ferrisburgh and Addison.

Alternatives A and B were the preferred alternatives and were deemed worthwhile investments. Alternative C was not recommended because of strong opposition from the residents in the affected towns and the additional costs and travel time it would impose on trucks.

[6] VT 22A Truck Route Study (2019): https://acrpc.org/wp-content/uploads/2021/04/2019-05-16_Final22ATruckTrafficStudy.pdf

A portion of Alterntaive A was implemented as part of a 2020 resurfacing project. This included the construction of curb extensions to shorten pedestrian crossings, the installation of Rectangular Rapid Flashing Beacons (RRFB) at several marked crosswalks along Route 22A, and MUTCD-compliant pedestrian signal heads at signalized intersections along Route 22A at Green Street and Monkton Road.

The 2019 Route 22A Truck Route Study helped advance potential solutions through existing conditions data collection and conceptual alternatives development, building on the concepts considered in the 1995 Vergennes Route 22A Bypass Preliminary Design Report. The study also helped to build agreement in the surrounding towns that the impacts of large trucks on Vergennes was a critical issue that needs to be addressed. Two public information meetings were held, however, additional outreach to communities with the potential to be affected by project alternatives is necessary to achieve regional consensus that will allow the project to successfully compete for upcoming transportation funding opportunities.

The Vergennes PEL Study is the logical next step to follow the 2019 Study, as it broadens oversight of the effort to VTrans and includes an expanded outreach program to engage the public and agencies in the development of alternatives and outcomes to be advanced in the subsequent NEPA process.

Figure 2-10: Alternative A, 2019 Route 22A Truck Study

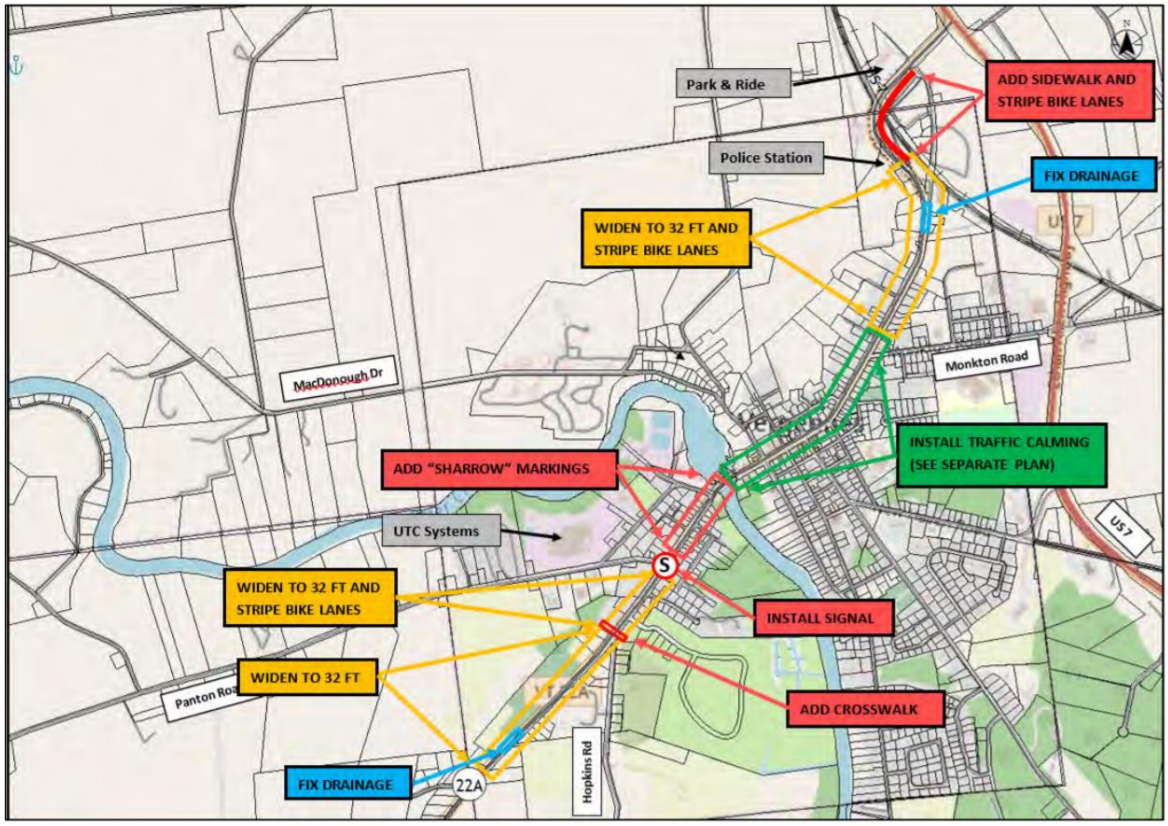


Figure 2-11: Alternative B, 2019 Route 22A Truck Study

2.4.4 Municipal and Regional Plans

Current municipal plans for each of the seven study area towns/cities, as well as the current Addison County Regional Plan, were reviewed to understand how and where the three previous studies were referenced and how future alternatives developed as part of the Vergennes PEL Study fit into these plans.

Vergennes Municipal Plan (2020 – 2028)

The current Municipal Plan for Vergennes was completed in 2020 and highlights several recommendations that are pertinent to the PEL study area. Major recommendations include:

- Support and pursue relationships with neighboring municipalities and the next planning phases of the Vergennes Economic Corridor.
- Improve and expand pedestrian and bicycle circulation
- Work with VTrans to re-route truck traffic away from the historic downtown area.
- Maintain or improve the current level of service on all roads in Vergennes
- Work to support improvements in rail service by state and federal agencies and the private sector

Addison Town Plan (2016-2021)

The current Municipal Plan for Addison was completed in 2016 and includes recommendations that are pertinent to the PEL study area:

- Centralize development along Route 22A to defined village center areas, to prevent development sprawl.
- Reimagine Route 22A as a corridor because in its current state it is not conducive to creating a 'village feel' due to high volumes, high speeds, and significant truck traffic.

Ferrisburgh Town Plan (2017-2025)

The current Municipal Plan for Ferrisburgh was completed in 2017 and notes that the short segment of Route 22A within Ferrisburgh (north of Vergennes) is a major truck route

New Haven Town Plan (2017)

The current Municipal Plan for New Haven was completed in 2017 and noted that U.S. Route 7 and Route 17 are primary corridors through New Haven and any increase of through truck traffic would have quality of life impacts.

Panton Town Plan (2019)

The current Municipal Plan for Panton was completed in 2019 and includes a summary of past work associated with Roue 22A and a potential bypass. The Plan explicitly recognizes "the traffic issues and concerns with regard to truck traffic in downtown Vergennes but does not take a position at this time supporting or opposing the study and its recommendations." The Plan further notes that "given current economics and state transportation policy, it is highly unlikely that a bypass will be considered anytime in the near future."

Waltham Town Plan (2015)

The current Municipal Plan for Waltham was completed in 2015 and noted that U.S. Route 7 and Route 17 are primary corridors through Waltham and any increase of through truck traffic would have quality of life impacts. The Plan further notes that "Future increases in traffic

volumes, the rerouting truck traffic along Route 17 out of Vergennes or the creation of inefficient land use patterns could negatively impact road conditions within Waltham."

Addison County Regional Plan

The Addison County Regional Plan was completed in 2018 and includes several elements that will be considered as alternatives are developed and advanced. These include:

- Route 22A appears on the High Crash Location Report, including concerns with increased truck traffic
- Route 22A has been identified as an important linkage between the Route 4 corridor in New York with Chittenden County
- Previously studied alternatives for a truck bypass would include high costs and impacts; existing corridors should serve as the primary alternative
- Short Term Recommendations for Route 22A include a mixture of truck routes, traffic calming, and intersection improvements.
- Mid-Term Recommendations for Route 22A include a review of high crash locations along Route 22A
- Long Term Recommendations include a review of needs at the intersection with Panton Road-and the advancement of corridor improvements outlined in the Western Corridor Plan
- Recommended Actions to mitigate issues stemming from truck traffic and freight include:
  - Short Term: General – Encourage towns to develop hazard mitigation plans that address hazards from materials transported through the community.
  - Short Term: General – explore and create truck routes that address concerns of Vergennes and neighboring communities.
  - Mid-Term: General – Study high crash locations along 22A and identify recommended improvements.

Route 22A Corridor

VTrans has allocated funds for projects to address safety and maintenance concerns along Route 22A south of Addison. These projects include 15 miles of new paving from the north end of the Fair Haven Village limits through Orwell to VT 73 and a reclamation project for the 20-mile section from Orwell at VT 73, north to Addison. In addition, over the next five years, widening projects are planned for over 11 miles of Route 22A from West Haven to Orwell. Travel lanes will widen from 10 feet to 11 feet, and shoulders will widen from 2 feet to 6 feet to provide a 10-foot wider pavement surface (24 feet wide to 34 feet wide).

2.5 SUMMARY

While Route 22A is primarily a rural corridor that traverses western Vermont, the 2.2-mile section that bisects downtown Vergennes is a primary corridor for regional trips, particularly trucks, traveling between northern Vermont and points south and west. Vergennes and its surrounding communities are regionally significant tourism destinations because of the downtown Vergennes commercial core, outdoor recreational activities, and major events. A review of demographic and mobility data within the study area indicated that a personal vehicle is the primary mode of transportation, though many residents within Vergennes walk or rely on public transportation.

Previously completed studies, including those in 1995, 2002, and 2019 are the precursors to this effort, having identified concerns regarding truck trips throughout the corridor and identified potential alternatives aimed at addressing those concerns.

Finally, a review of municipal and regional plans summarized how and where previous work has been highlighted, or where concerns with the Route 22A corridor have been explicitly identified.

3. Outreach and Data Collection Efforts

As described in section 2.4.3, the 2019 Route 22A Truck Route Study helped advance potential solutions through existing conditions data collection and conceptual alternatives development, building on the concepts considered in the 1995 Vergennes Route 22A Bypass Preliminary Design Report and revisited in the 2002 Feasibiliy Study. However, the outreach conducted for the 2019 study was limited to two public information meetings and presentations to the ACRPC Transportation Advisory Committee. Additional outreach to communities with the potential to be affected by project alternatives is necessary to achieve regional consensus that will allow a future project to successfully compete for upcoming transportation funding opportunities. The PEL process is intended to streamline the planning process, shorten timelines in the NEPA process and reduce overall costs. As such, the Vergennes PEL Study includes an inclusive and expanded outreach program. Ensuring adequate time to build regional consensus on how future alternatives could impact social, cultural and community resources in the study area will result in stronger working relationships between local government, agencies, and transportation departments.

In addition, the environmental provisions in 23 U.S.C §139 require that lead agencies establish a plan for coordinating public and agency participation and comment on the environmental review process for a project. Accordingly, a Public Involvement Plan (PIP) and Agency Coordination Plan (ACP) were developed for this PEL study to describe the process and communication methods for disseminating information about the study and for soliciting input from the public and agencies. The PIP complies with the Fixing America's Surface Transportation Act (FAST Act), which includes a collaborative and integrated approach to transportation decision-making that considers benefits and impacts during the planning process.

Individual outreach activities that have occurred to date in accordance with the approved PIP and ACP to glean input on the purpose and need statement are described below. The PIP, ACP, and summaries of the outreach activities are available on the study website (https://vergennespel.com).

3.1 CITY COUNCIL AND SELECTBOARD MEETINGS

VTrans attended city council and Selectboard meetings for the City of Vergennes and each of the six additional towns within the study area through the months of October and November 2021. These meetings were intended to formally introduce the Vergennes PEL Study as the continuation of work previously completed during the 2019 Truck Route Study. The most shared themes during these meetings included:

- Acknowledging the need to address truck traffic through downtown Vergennes
- Maintaining the economic vitality of downtown Vergennes as the economic center for several of the towns
- A desire for inclusivity and increased participation from all interested and potentially impacted parties in the study
- A desire for clarification on what alternatives may be considered
- For towns served by US Route 7 or Route 17, an understanding of potential impacts to those routes
- Maintaining rural character of the surrounding area.

3.2 PUBLIC MEETING

A public meeting was held on November 4, 2021, at The Vergennes Opera House in downtown Vergennes with in-person and virtual accommodations provided. Approximately 40 people attended in person, with 76 attendees participating remotely. The purpose of the meeting was to help develop a purpose and need statement for the PEL study. The presentation focused on an overview of the past Vergennes studies, the current PEL study, updated traffic data, and themes of the current PEL study: mobility, equity, environment, and economic. The previous (2019) purpose and need statement, public outreach activities to date and planned outreach activities for the PEL study were also presented. Following the presentation, a Question & Answer session was opened for attendees in the room and attendees participating virtually to provide feedback and ask questions. Public input focused on key themes considered in the study, which are listed below.

Mobility

- Otter Creek bridge is a concern for emergency services because there are no convenient detour options
- Have other modes (rail/barge) been considered as an alternative to trucks?
- How will COVID impacts on traffic be reflected in the effort?
- Overall concerns about impacts that a bypass may have on economic viability of downtown Vergennes.

Equity

- How will impacts to long-term residents in Otter Creek Park be minimized or mitigated?

Economic

- How can alternatives be leveraged to maximize potential growth opportunities?

Environmental

- What are potential land use impacts beyond Vergennes?

3.3 FOCUS GROUP MEETINGS

Four focus group meetings were held to give an opportunity for focused discussions on key themes, including mobility, equity, economic, and environment. Attendees were identified given their expertise in each of the four themes. The feedback received during these meetings are incorporated into the purpose and needs described in section 4. Key takeaways from each focus group include:

Mobility

The mobility group included representatives from Vermont Rail Action Network, Tri-Valley Transit, Vergennes Public Works, and the town of Ferrisburgh. There is a desire to understand how to improve conditions for vulnerable users. Significant discussion on how trucks impact downtown, including congestion, noise, and overall quality of life. The group also discussed transit use in the corridor.

Equity

The equity group included representatives from local and state agencies focused on supporting community needs, including the Vermont Agency of Human Services, Addison County Community Trust, AARP Vermont, and Counseling Services of Addison County, among others. Discussion was primarily focused on impacts to affordable housing, particularly the Otter Creek Park. Discussion also included strategizing about outreach methods that would be helpful to reach traditionally underserved populations in the area.

Economic

The economic focus group included public and private stakeholders, including the Addison County Economic Development Corporation and Chamber of Commerce, the Vergennes Partnership, and Collins Aerospace. The group discussed positive and negative benefits of a potential bypass, including loss of economic activity in downtown Vergennes due to reduced traffic.

Environment

The environment focus group included representatives from numerous local and regional groups, including the Vermont Agency of Natural Resources, Addison County Farm Bureau, Vermont Land Trust, and Lake Champlain Committee. The effort needs to be mindful of significant agricultural activity within study area, land conservation, and aquatic resources.

3.4 ONE-ON-ONE INTERVIEWS

As a follow up to the focus group meetings, one-on-one interviews were held in December with representatives from the Vermont Land Trust, Vermont Rescue Squad, Vergennes and Ferrisburgh Volunteer Fire Departments, and a resident of the Otter Creek Mobile Home Park.

The key takeaways from each interview are noted below. Additional specific comments are cited within section 4 of this document, where appropriate.

- **Otter Creek Mobile Home Park** –Although some residents may not be opposed to a new bypass alternative, there are major concerns about impacts to or the possible loss of their homes.
- **Vermont Land Trust** – Understand the need to improve truck traffic along Route 22A but would like to identify a solution that has little to no impact on conserved land.
- **Vergennes Rescue Squad** – Safety is the major concern and any improvements that make it easier for emergency vehicles to travel Route 22A will be welcomed
- **Ferrisburgh Volunteer Fire Department –** Emergency responses on Route 22A are most impacted during peak summer months by seasonal traffic. Emergency vehicle preemption should be considered as part of any improvement scheme.
- **Vergennes Volunteer Fire Department –** Trucks do not necessarily impact emergency response times. Emergency vehicle preemption was already installed at Green Street but should be considered at additional intersections within the study area.

3.5 WEBSITE

A website was developed for the Vergennes PEL Study (https://vergennespel.com). The website includes information on the PEL process, study activities and progress, public participation opportunities, and contact information. Study documents and videos are available for download and review. The website will be kept up to date with information on the study and provides a link to allow people to sign up for the mailing list and submit comments electronically. Comments received during the project will be incorporated into the PEL study.

3.6 COMMITTEE OVERSIGHT AND AGENCY COORDINATION

Throughout the PEL study, specialized committees/working groups will be consulted to provide topic-specific input and play a role in guiding the direction of the study. Members of the committees include representatives from regional and state agencies, and local businesses and organizations. Technical Committee, Policy Committee, and Interagency Coordination efforts are outlined below.

3.6.1 Technical Committee

The Technical Committee consists of subject matter experts that review and verify the scope of work, methods and assumptions used by the consultants to carry out the study, and any resulting recommendations. The Technical Committee's role is to ensure that the Policy Committee has reliable information on which to base its findings and decisions. Membership includes VTrans planning, highway design, structures, bicycle and pedestrian, and

environmental staff; ACRPC and municipal land use planners; FHWA staff; municipal public works and road foreman; and economic development specialists.

3.6.2 Policy Committee

The Policy Committee is charged with endorsing the findings in the PEL and making recommendations to VTrans on study planning decisions (i.e., purpose and need statement, initial short-list of alternatives) which would be carried forward into a future environmental review. The Policy Committee functions as a body with wide knowledge that can speak on behalf of many communities impacted by this study and will take into consideration recommendations from the Technical Committee in its decision-making process. It consists of representatives from the seven municipalities potentially affected by the alternatives (Addison, Ferrisburgh, Panton, New Haven, Vergennes, Waltham, and Weybridge), VTrans, and other stakeholders representing the region, environment, and economy.

3.6.3 Agency Coordination

In advance of future environmental reviews, an Agency Coordination Plan (ACP) was developed to define the roles and guide coordination activities through the duration of the Vergennes PEL Study with interested, may be cooperating and participating state and federal agencies under NEPA in future environmental review(s). VTrans will use information developed in the Vergennes PEL Study to inform the NEPA process for capital projects that are initiated subsequent to this study. Integrating transportation planning and environmental screening early leads to value-added projects that have undergone stakeholder and public review with a collaborative interagency approach. This method lends itself to early problem identification and solving, requiring less duplication of effort in the NEPA process and potentially accelerating project delivery and minimizing overall costs.

3.7 DATA COLLECTION

In addition to the public outreach efforts, data were collected to support the development of the purpose and need statement. These data collection efforts include a survey to the trucking industry, noise and vibration monitoring, and traffic counts, as described in the next sections.

3.7.1 Trucking Survey

A survey was distributed to the trucking industry to gather feedback and information on truck related issues experienced by the industry within and traveling through Vergennes, Vermont. The 12-question survey was distributed to constituents[7] of the Vermont Truck and Bus Association (VTBA), including truck drivers, owners, operators, and those who regularly travel along Route 22A. The survey received a total of 36 responses from across the industry,

[7] The survey was distributed to 335 VTBA, of which 270 (approximately 80%) are large truck owners or operators.

including details about their cargo, travel habits, and experiences along the corridor. The results of the survey can be found in section 5.1.1. Survey questions included:

1. How frequently do you travel along Route 22A through Vergennes?
2. What type of vehicle(s) do you predominantly use to make this trip?
3. What cargo do you typically haul through Vergennes?
4. What is the primary reason you use Route 22A and travel through Vergennes?
5. What are the typical origins/destinations (municipality or town with state) of your trips that travel through Vergennes?
6. Are there existing impediments or bottlenecks that you face in Vergennes?
7. What route or routes would you use if Route 22A through downtown Vergennes was no longer an option?
8. To what extent would your detour be if through trips were no longer permitted along Route 22A?
9. Are there other concerns that you have about Route 22A or Vergennes that the study team should be aware of?
10. Do you believe that supply chain or business model shifts will alter how you currently travel through Vergennes?
11. Would you like a representative from the PEL study to follow-up with you by email or phone?

3.7.2 Noise and Vibration Monitoring

Noise and vibration measurements were collected in November 2021 to document existing (baseline) noise and vibration levels affecting two receptor locations – the Vergennes Opera House and the Black Sheep Bistro. The primary sources of noise and vibration at these locations involves large trucks making use of Main Street directly through town.

The Vergennes Opera House is located adjacent to the intersection of Route 22A at East Street and its front facade is located approximately 60 feet from the roadway center line. The Black Sheep Bistro is located on Route 22A within the steepest section of the corridor, between Water Street and Maple Street. Its front facade is located approximately 45 feet from the roadway center line. The results of this analysis can be found in Section 5.3.1.

3.7.3 Traffic Counts

Primary traffic counts were conducted in July 2021 as part of this PEL study. The traffic data collection was completed utilizing Miovision Scout video data collection units. These portable

machines count traffic electronically by mounting to a pole and getting a clear view of the roadway. The video processing can identify various types of vehicles traveling through a corridor. The data breakdown identified classed vehicles distinguishing Motorcycles, Automobiles, Buses, Single-Unit Trucks, and Articulated Trucks. Traffic count data were collected for seven days (7/22 through 7/28, inclusive) at two locations on Route 22A:

- Vicinity of Vermont Discount Store (north of downtown Vergennes)
- South of Hopkins Road (south of downtown Vergennes)

These count data were used to rebalance existing turning movement counts and ultimately perform the operational analysis detailed in section 4.2.1.

3.8 SUMMARY

Inclusive local outreach is a critical element of the PEL process, providing local insights and helping build consensus on how to best advance a project that is community-supported. Outreach performed during the development of the purpose and need document included Participation at regularly scheduled city council and Selectboard meetings for each study area municipality.

- A public meeting at the Vergennes Opera House attended by more than 100 residents and stakeholders (virtually and in-person).
- Four focus groups representing key themes (mobility, equity, economic, environment), attended by local, regional, and state stakeholders and representatives.
- Targeted interviews with representatives from agencies identified in conjunction with other outreach forums.
- Working groups and committees that include representatives from regional and state agencies.
- Targeted data collection focused on the trucking industry, noise and vibration impacts, and traffic counts.

The input and data collected as part of this effort provided specific information that formulated initial needs detailed further in Section 4.

4. Purpose and Need

One of the first major steps in the Planning and Environment Linkages process is to develop a purpose and need statement. A purpose and need statement is an important component of PEL studies and environmental reviews prepared by VTrans, as it sets the stage for the specific problems to be addressed. The ***purpose*** defines the transportation problem to be solved. The ***need*** provides evidence that supports the assertion made in the purpose. The purpose and need statement developed for this PEL study builds upon the 2019 purpose and need and reflects extensive public outreach and data collection efforts described in Section 3.

4.1 PURPOSE AND NEED STATEMENT

The ***purpose*** is to reduce the impacts of through truck traffic, including safety, congestion, noise, vibration, and dust on Route 22A in downtown Vergennes. Transportation solutions that reduce truck related quality of life impacts should also meet the mobility, safety, and economic vitality needs of Vergennes and the neighboring communities. A summary of the ***needs*** identified are detailed below.

	**Mobility and Access:** Maintain opportunities for the movement of freight in the region and minimize and/or mitigate traffic impacts to other transportation corridors.
	**Safety, Circulation, and Resilience:** Support the continued movement, resilience and safety of travel through downtown Vergennes and in the neighboring communities.
	**Quality of Life:** Improve the quality of life and minimize negative property and environmental resource impacts in downtown Vergennes and neighboring communities.
	**Economic Vitality:** Promote economic vitality of downtown Vergennes, goods movement in Vergennes and neighboring communities, and support rural economy.
	**Land Use:** Support local and regional land use plans and policies and state land use goals.

4.2 NEEDS

Supportive data for each need identified in the purpose and need statement is provided in the following sub-sections.

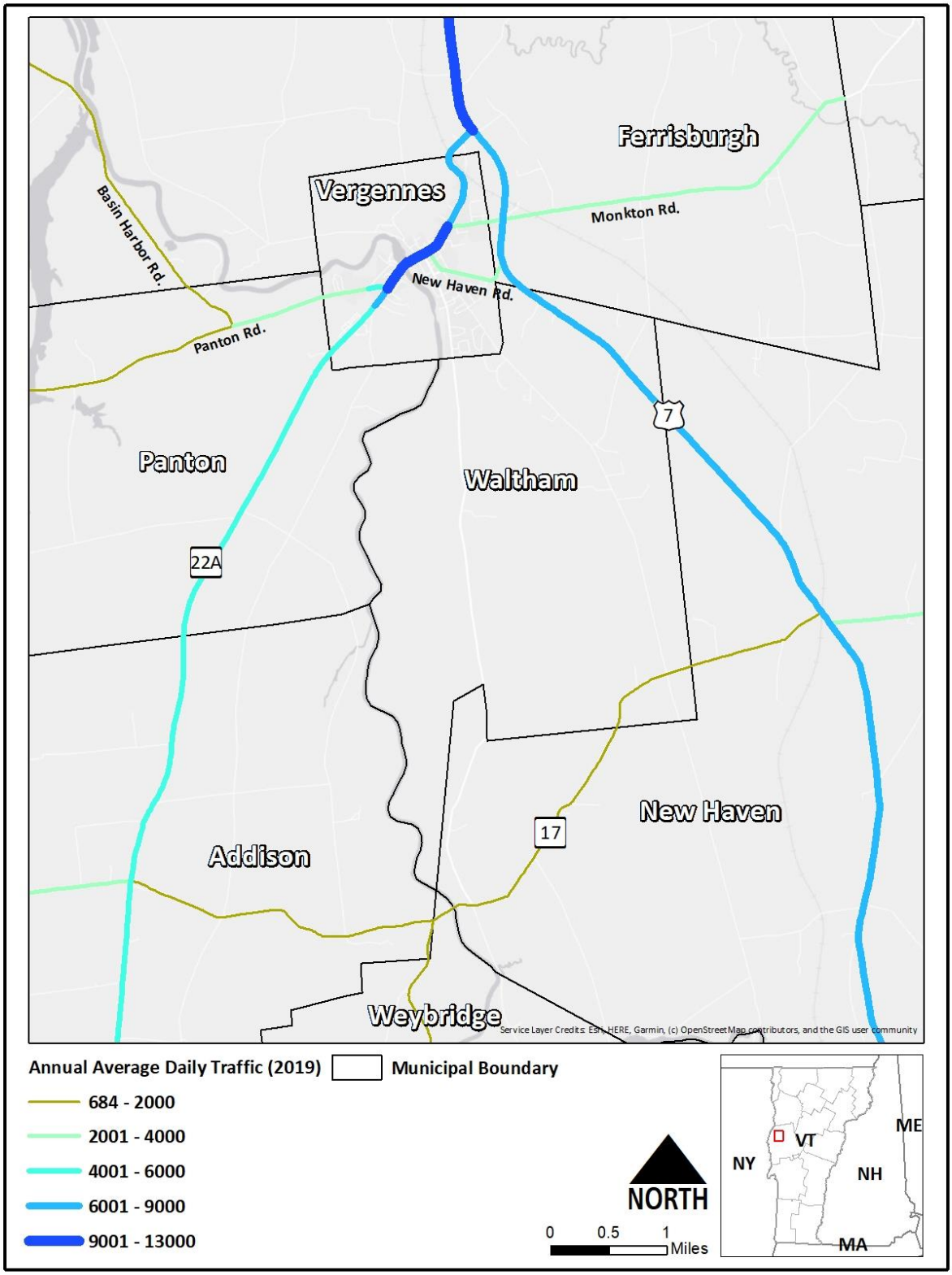
4.2.1 Mobility and Access

Route 22A serves many different types of users simultaneously, including passenger vehicles, large trucks, buses, cyclists, and pedestrians. Balancing the needs of those users is an integral part of this study. This section outlines the needs of each, within the context of the study corridor and surrounding communities.

To understand current vehicular traffic conditions within Vergennes, traffic counts were collected from the VTrans Traffic Data Management System (TDMS). Route 22A through downtown Vergennes is among the most heavily traveled routes within the region, with an Annual Average Daily Traffic (AADT) exceeding 10,000 during pre-pandemic counts. Similar traffic levels were observed along U.S. Route 7 north of Route 22A, which has an AADT over 10,000. As shown in Figure 4-1, north-south traffic north of Vergennes primarily utilizes U.S. Route 7, however at the intersection with Route 22A, traffic is split evenly between Routes 22A and U.S. Route 7. South of Vergennes, the AADT on Route 22A is approximately 50% lower than volumes observed in Vergennes, reinforcing the importance of Vergennes as a regional origin or destination. Traffic count data also shows that downtown Vergennes has significantly higher traffic than either side of the downtown – suggesting some internal circulation of traffic within the downtown and traffic using small sections of roadway to connect between intersection roadways.

A review of historic count data collected from the VTrans TDMS is illustrated in Figure 4-2. This indicates that while overall traffic along Route 22A has declined slightly, truck volumes have remained consistent or increased. For locations where 2021 count data is available, it is evident that traffic volumes have generally returned to pre-pandemic levels, following a dip in 2020.

Figure 4-1: Annual Average Daily Traffic – Key Roadways, 2019



Source: Vermont Agency of Transportation Traffic Data Management System

Figure 4-2: Historic AADT Data and Truck Percentages – Route 22A

Note: Vehicular or truck count data was not present for every count year analyzed at these sites.

Anecdotal information collected via interviews and surveys with trucking industry representatives confirmed that Route 22A is the preferred roadway for north-south truck traffic in the region, providing the most direct route for freight traffic traveling between northern Vermont and New York. The presence of large trucks (FHWA Class 7/Four-axle single unit, or larger) within an already highly utilized corridor exacerbates congestion through the segment of Route 22A within Vergennes. In addition, current topographic conditions along Route 22A include a section between Otter Creek and Maple Street where an approximately 11% grade can create challenging conditions for heavy vehicles traveling northbound, particularly during inclement weather conditions.

To understand overall traffic operations, as well as where truck volumes impact traffic flow most substantially, a level of service[8] (LOS) analysis was conducted at key intersections along the corridor using Synchro (Version 10). Four key intersections were identified along Route 22A within Vergennes, including Panton Road/Elm Street, Water Street/MacDonough Drive, Green Street, and Monkton Road. These intersections were selected based on traffic throughput within the city and regional connections into adjacent municipalities in Addison County. Traffic counts obtained during July 2021 were used to balance counts within the study area that had been adjusted using VTrans Redbook[9] growth factors (2019 edition). As such, the analysis is reflective of changes in travel patterns associated with the COVID-19 outbreak. Overall, intersections along Route 22A within Vergennes operate at an acceptable LOS. Short term queues are present approaching the Green Street intersection, but overall, Route 22A does not regularly experience conditions approaching or over capacity. A summary of LOS conditions at these key locations is included in Table 4-1. A review of conditions for each intersection is included below.

[8] Leve of Service (LOS) is a quantitative analysis of the operating conditions of a roadway or intersection based on traffic volumes, speeds, density, or congestion, as set forth by the Highway Capacity Manual (HCM). LOS can range from LOS A (free flow conditions) to LOS F (breakdown or unstable flow where traffic volumes exceed available capacity).

[9] The VTrans Redbook is an annually conducted compilation of Continuous Traffic Counter data that is used to create seasonal adjustment factors and growth factors for various general roadway classifications.

Table 4-1: Level of Service Analysis

Intersection	Approach Direction	Existing Conditions 2021- AM Peak			Existing Conditions 2021- PM Peak		
		Delay (sec/veh)	LOS	Queue (ft)	Delay (sec/veh)	LOS	Queue (ft)
Route 22A at Panton Road/Elm Street (Two-way Stop Controlled)	Eastbound	20.7	C	49	81.3	F	249
	Westbound	9.5	A	1	9.5	A	1
	Northbound	1.4	A	2	2.8	A	2
	Southbound	0.2	A	0	0.7	A	6
	Overall	**4.8**	**A**		**21.9**	**C**	
Route 22A at S. Water Street/MacDonough Drive (Two-way Stop Controlled)	Eastbound	22.8	C	29	24	C	27
	Westbound	31.6	D	50	30.1	D	42
	Northbound	0.6	A	2	0.6	A	2
	Southbound	0.4	A	1	1.2	A	3
	Overall	**4.6**	**A**		**4.4**	**A**	
Route 22A at Green Street (Signalized)	Eastbound	7.2	A	21	15.5	B	55
	Westbound	28.8	C	239	23.5	C	112
	Northbound	35.7	D	172	19.9	B	#333
	Southbound	28.6	C	156	17.3	B	#287
	Overall	**30.2**	**C**		**19.2**	**B**	
Route 22A at Monkton Road (Signalized)	Westbound	8.4	A	34	10.2	B	73
	Northbound	11.7	B	108	18.4	B	#194
	Southbound	11.5	B	84	19.1	B	#175
	Overall	**11**	**B**		**16.9**	**B**	

NOTE: # – 95th percentile volume exceeds capacity

Route 22A at Panton Road/Elm Street

This intersection is a two-way stop-controlled intersection located approximately one-quarter mile south of Otter Creek. A flashing red/yellow signal was installed to reinforce the presence of the intersection for approaching traffic. Panton Road is a major collector that provides a direct connection to Panton and Lake Champlain, as well as industrial uses within Vergennes, including Collins Aerospace, the largest employer within the city. Elm Street is a compact street that serves a small residential community of approximately 25 homes.

The overall intersection LOS exhibits acceptable operations during the AM Peak (LOS A) and PM Peak (LOS C). The PM Peak experiences higher traffic volumes linked with the shift change at Collins Aerospace. Calculated 95% Queue lengths illustrate that during the PM Peak Panton Rd may experience significant queuing due to the lack of adequate gaps along Route 22A and the stop-controlled condition on the Panton Rd. Approach.

As a secondary outcome, this PELS should consider improving this intersection to provide better freight and worker access to the industrial area on Panton Road, including Collins Aerospace, the largest employer in Vergennes.

Route 22A at Water Street/MacDonough Drive

This intersection is a two-way stop-controlled intersection located approximately 500 feet north of Otter Creek. This intersection is located within the segment of Route 22A where an approximately 11% grade is present. MacDonough Drive provides regional connections north and west into Ferrisburgh, while Water Street connects south into the residential downtown core of Vergennes, as well as Waltham and New Haven via Maple Street.

The overall intersection LOS exhibits acceptable operations during the AM Peak (LOS A) and PM Peak (LOS A). Intermittent delays may be present on Water Street or MacDonough Drive during peak travel times, but do not result in degraded operational conditions.

Discuss operational issues with trucks on the hill on the northbound approach. A traffic signal has been considered at this intersection, but there were concerns with the ability of trucks to re-start from a dead stop on the hill, especially in with snow or ice on the road.

Route 22A at Green Street

This signalized intersection is centrally located within downtown Vergennes and is flanked by the City's commercial core. South of the intersection, Green Street connects south into the residential downtown core of Vergennes, as well as Waltham and New Haven.

The overall Intersection LOS exhibits acceptable operations during the AM Peak (LOS C) and PM Peak (LOS B). While the analysis shows that the intersection operates efficiently during peak periods, the queues generated along Route 22A can extend past downstream intersections north and south.

Route 22A at Monkton Road

This three-legged signalized intersection is located on the northern fringe of downtown Vergennes. Monkton Road provides a direct link to U.S. Route 7 and provides direct access to the regional High School (Vergennes Union High School).

The overall intersection LOS exhibits acceptable operations during the AM Peak (LOS B) and PM Peak (LOS B). Intermittent queuing is present on Route 22A during the PM peak but does not result in degraded operational conditions.

Summary

While the analysis detailed above does not identify notable traffic concerns, right sizing the roadway to ensure all modes are supported through this corridor, particularly through downtown Vergennes will be a focus for this PEL study, supporting the economic vitality of the region in the future. As one of the most highly traveled roadway segments in the region, alternatives will be advanced that support existing or future traffic demands and non-motorized modes of transportation.

Freight

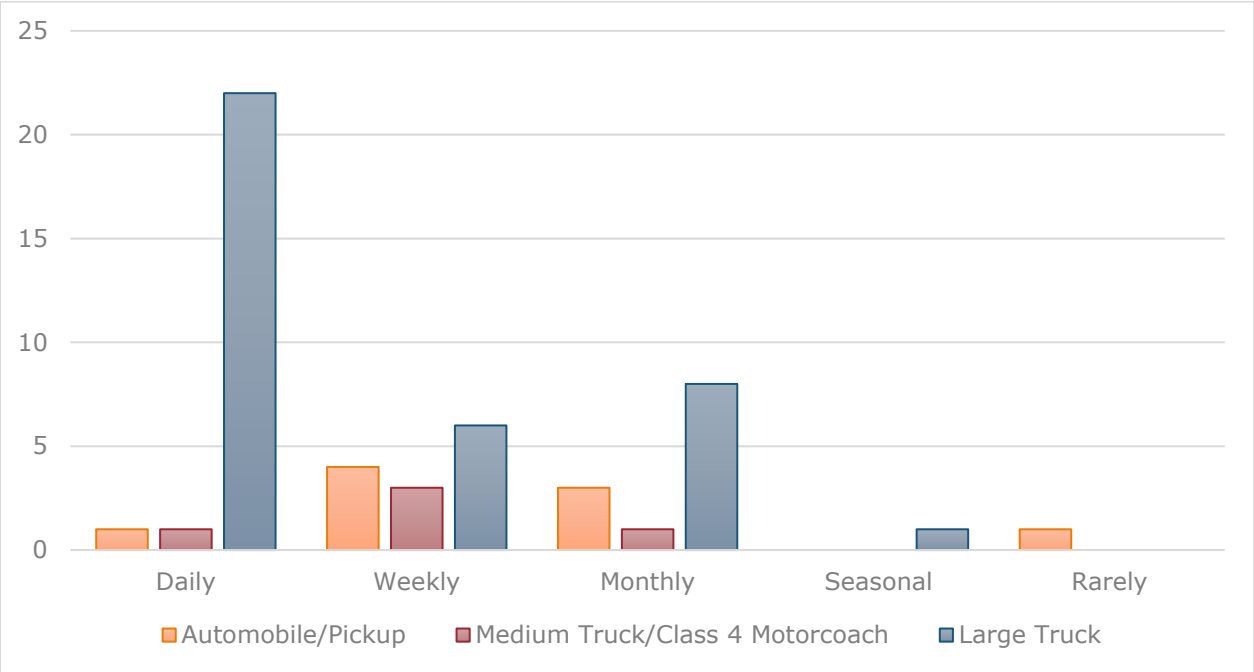
Freight mobility is a critical element of this effort given the noteworthy presence of trucks along Route 22A within Vergennes. The 2019 Route 22A Truck Route Study confirmed the significant truck traffic volumes that travel through Vergennes daily. Initial outreach as part of the Vergennes PEL Study provided anecdotal information about impacts from truck trips along Route 22A. Key truck traffic issues identified via formal focus groups and presentations to Vergennes City Council and six municipal Selectboards included:

- Few truck trips originate in or are destined to Vergennes; most truck trips along Route 22A are through trips.
- Many fuel trucks travel Route 22A between New York State and Burlington.
- The grade between Otter Creek and Green Street is an issue for northbound trucks, particularly in inclement weather, but also an issue for southbound trucks unfamiliar with the area that are often forced to engine brake to traverse the downgrade.
- Vergennes has a significantly higher prevalence of truck traffic than all other peer communities bisected by a state highway (e.g., Brandon, Ludlow, Wilmington, Manchester).

In addition to the results of the outreach detailed above, an interview with a representative from the Vermont Truck and Bus Association (VTBA) was conducted and a 12-question survey was distributed to its constituents, including truck drivers, owners, operators, and those who regularly travel along Route 22A. Ultimately, this process underscored the importance of Route 22A as a critical corridor for the movement of freight in the region. The survey, as described in section 3.7.1, included details about the industry's cargo, travel habits, and experiences along the corridor. The following data and summary reflect the findings of this survey.

Figure 4-3 summarizes the survey responses based on 1) the frequency with which they travel the Route 22A corridor and 2) the size of the vehicle they use for these trips. The type of freight being transported varied amongst respondents, but the most reported types included general freight, agricultural/dairy products, construction equipment, and groceries.

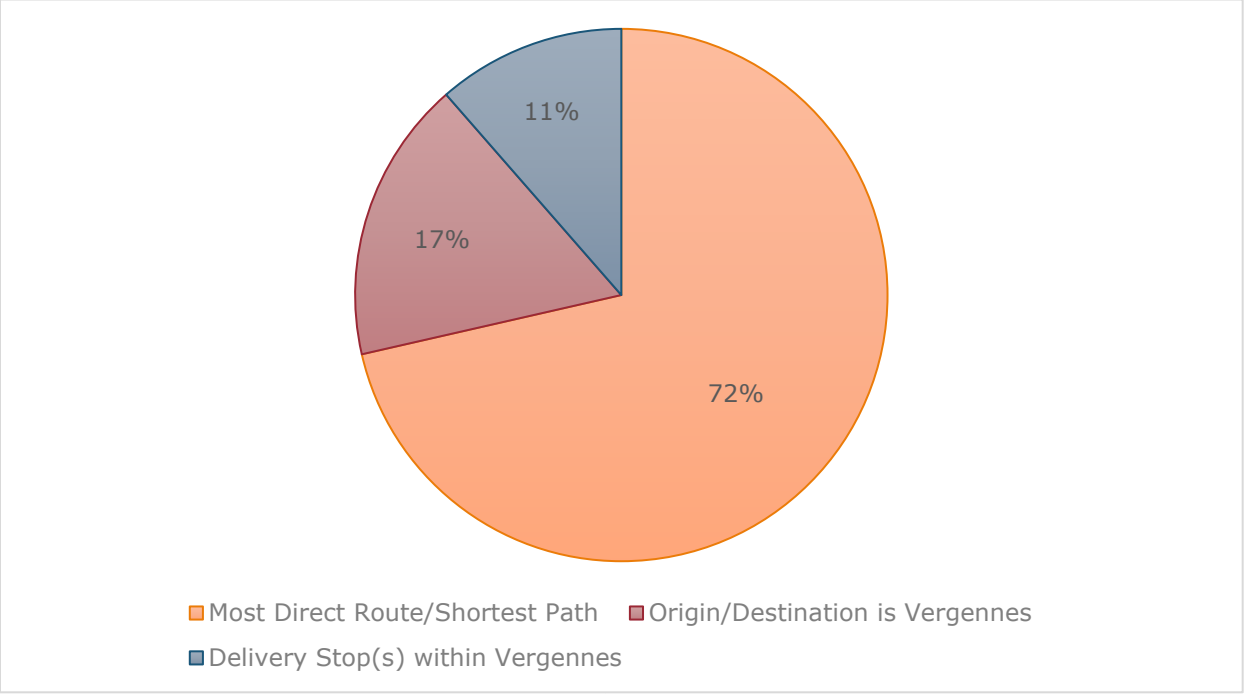
Figure 4-3: Truck Survey Responses – Trip Frequency and Vehicle Type



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021

Nearly 75% of all respondents confirmed that their trip through Vergennes is simply because it is the most direct and shortest distance to get to their end destination, as illustrated in Figure 4-4.

Figure 4-4: Truck Survey Responses – Rationale for using Route 22A



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021

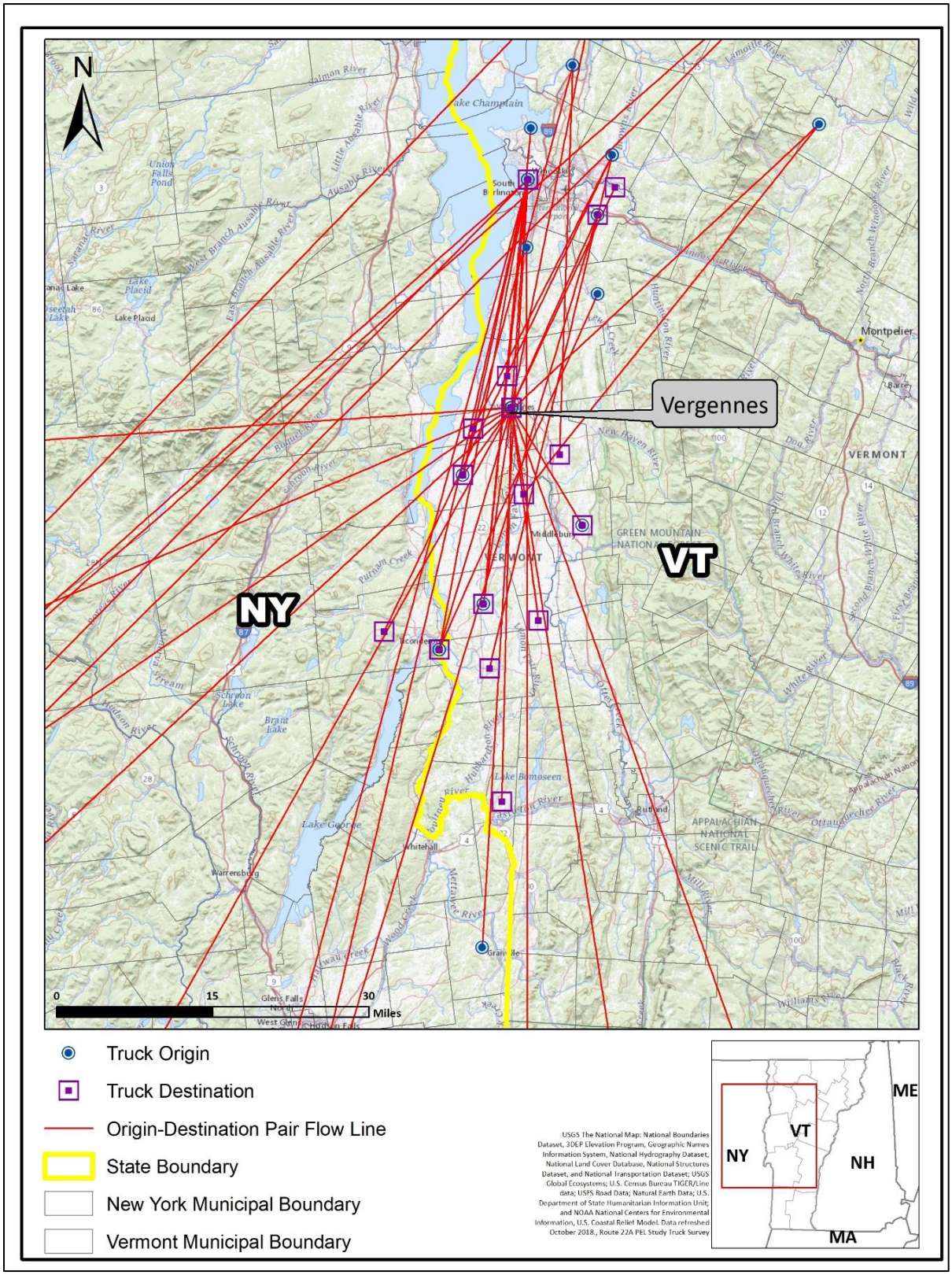
Additionally, respondents provided approximate origins and destinations (OD) of their typical trips through the corridor to understand the general flow of freight traffic through the region. Based on the survey responses, Table 4-2 and Figure 4-5 notes the reported origin and destination pairs, including some trips that travel outside the region. Many of the OD pairings show trips that frequently originate north of Vergennes and travel to destinations south or west of Vergennes, reinforcing Route 22A as the most direct path of travel given a lack of alternative routes.

Table 4-2: Survey Respondent Origin-Destination Pairings

		ORIGIN					
		NORTH OF VERGENNES	VERGENNES	ADDISON COUNTY/SOUTH OF VERGENNES	SOUTH OF ADDISON COUNTY	NEW YORK	OTHER
DESTINATION	NORTH OF VERGENNES	0	4	2	0	3	0
	VERGENNES	0	2	1	0	0	2
	ADDISON COUNTY/SOUTH OF VERGENNES	5	5	0	0	0	0
	SOUTH OF ADDISON COUNTY	2	2	0	0	0	0
	NEW YORK	7	2	0	0	0	0
	OTHER	7	7	0	0	0	0

Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021

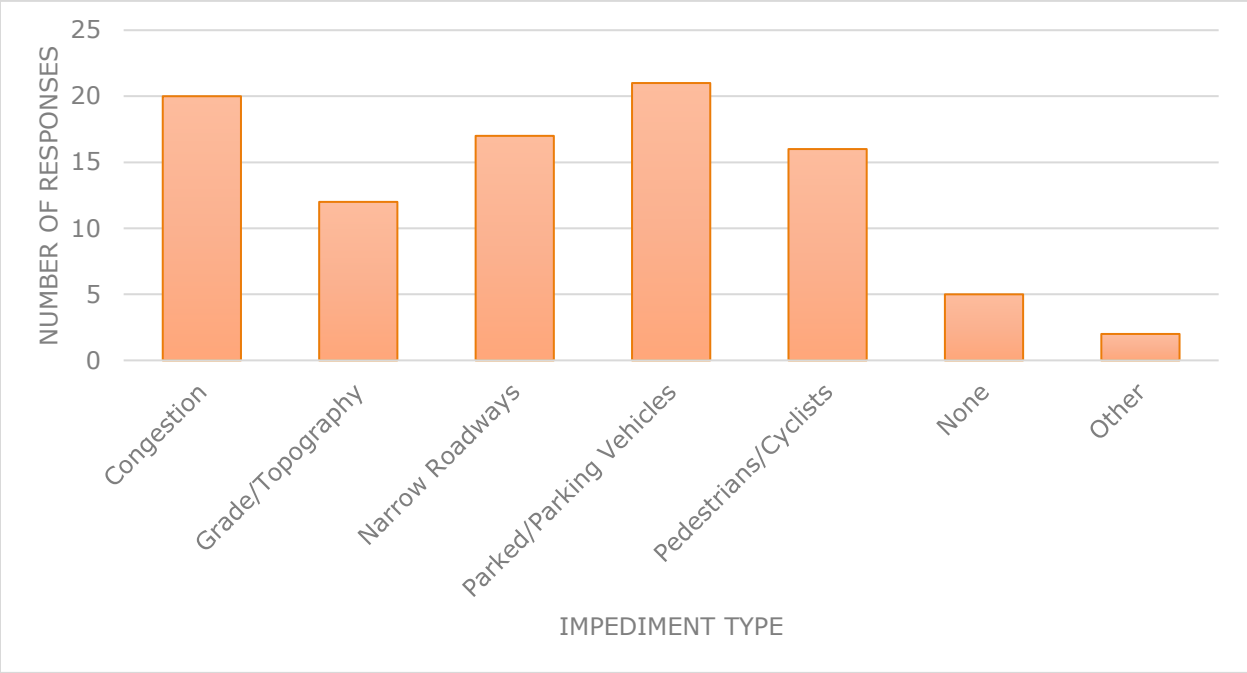
Figure 4-5: Truck Survey Responses – Approximate Origin-Destination Pairings and Associated Flow Lines



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021, State of Vermont – Vermont Open Data Portal

Industry respondents also provided input on the impediments that are encountered when traveling through Vergennes, shown in Figure 4-6. Parking vehicles and congestion issues were highlighted by more than half the respondents.

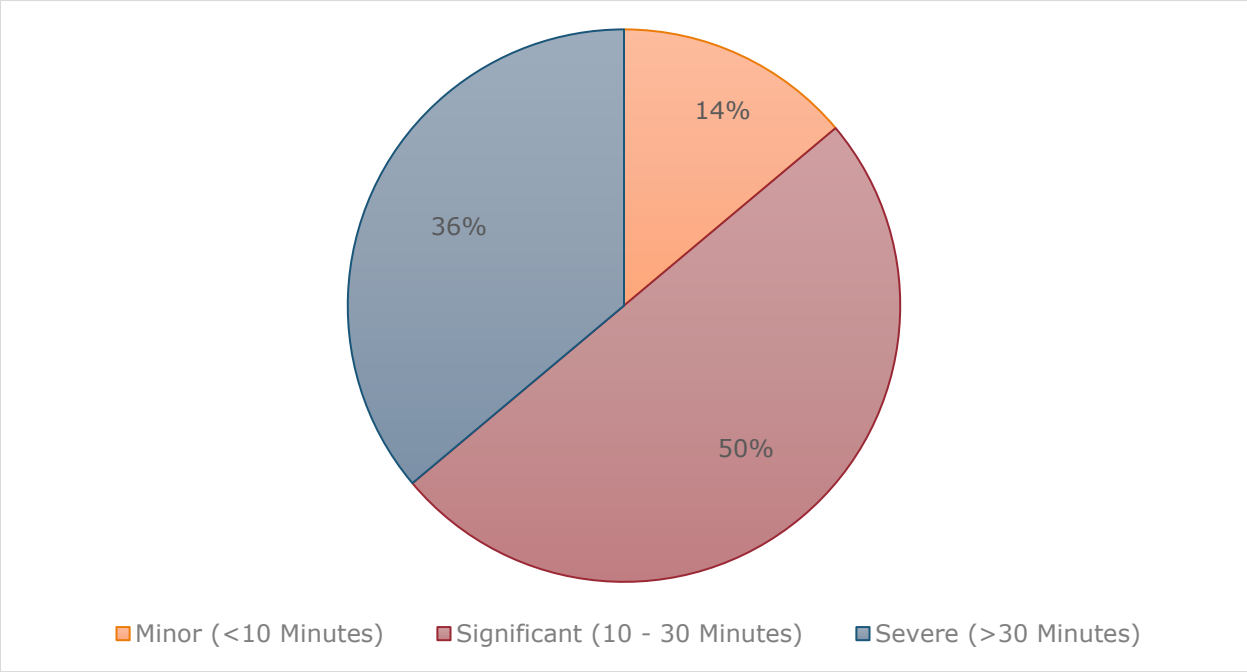
Figure 4-6: Truck Survey Responses – Impediments Generators Restricting Truck Flow in Downtown Vergennes



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021

The survey also sought feedback from the drivers as to the level of impact truck drivers would incur should they have to use a route other than Route 22A. Figure 4-7 indicates that the majority of respondents believe that routing away from Route 22A and downtown Vergennes would result in a significant delay (between 10 and 30 minutes) to their operations and would result in additional costs due to driver time or fuel.

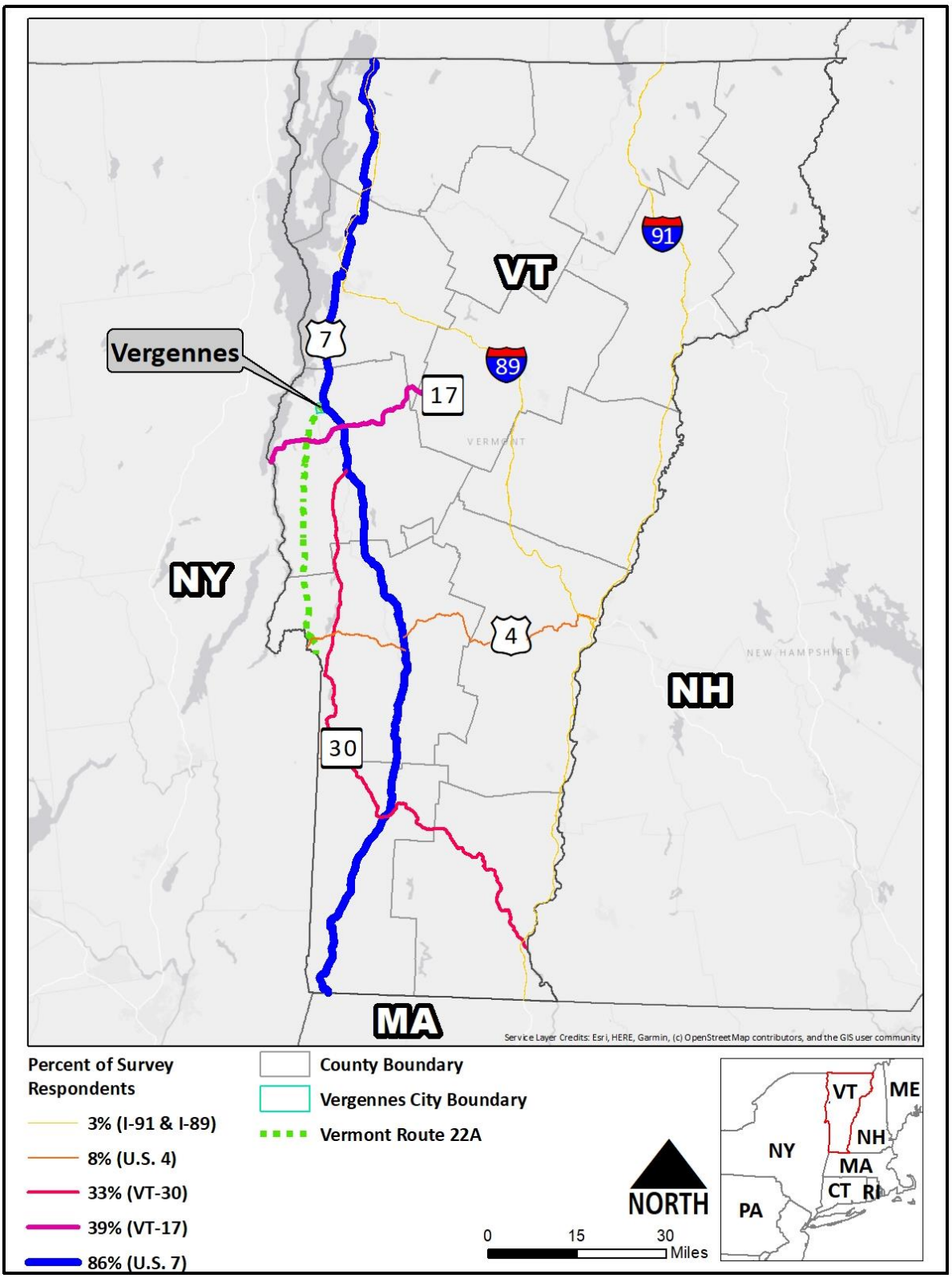
Figure 4-7: Truck Survey Responses – Expected Time Impacts Resulting from a Route 22A Truck Prohibition



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021

Finally, the survey sought to identify other roadway corridors that provide parallel alternative connectivity for trips if trucks are forced to use an alternative to Route 22A. As shown in Figure 4-8, most respondents (86%) noted that they would utilize U.S. Route 7 as their primary route in an instance where Route 22A was no longer available. Four respondents noted that no other route along this corridor would be a feasible option for their trips, citing topography, road width, and access constraints as their concerns.

Figure 4-8: Truck Survey Responses – Alternative Routes to Route 22A



Source: Vergennes PEL Study Survey to Vermont Truck and Bus Association, 2021
Note: Total exceeds 100%, as some survey respondents identified multiple routes.

Non-Motorized Transportation

Walking and bicycling are important transportation modes, particularly within downtown Vergennes. Vergennes is a compact community with a generally complete sidewalk network and many accommodations for pedestrians, including high visibility crosswalks, street furniture, and curb extensions.

Figure 4-9: Rectangular Rapid Flashing Beacon, Route 22A at Macdonough Drive, looking south

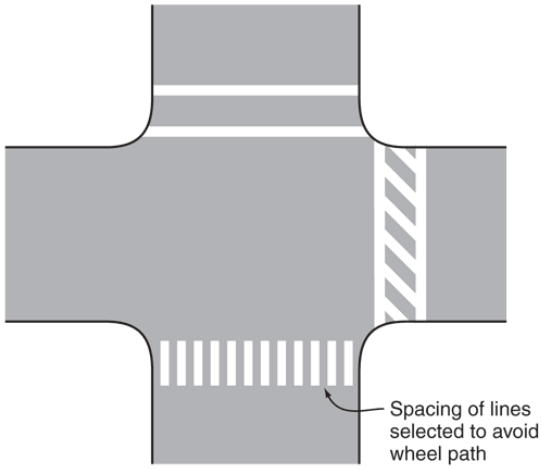


Figure 4-10: Crosswalk Marking Types, MUTCD, 2019

Major destinations, including Main Street businesses, parks, and schools, are generally accessible via foot. Continental-style crosswalks[10] are present at many intersections within downtown Vergennes, at signalized (Monkton Road and Green Street) and non-signalized (North Street, Maple Street, and MacDonough Drive/Water Street) intersections, as well as a mid-block crossing in front of St. Paul's Episcopal Church. Additional continental-style crosswalks are located within Vergennes on Route 22A south of Otter Creek at the non-signalized intersections with White Street, Canal Street, and Panton Road/Elm Street. A review of historic aerial photography indicates that a zebra-style crosswalk was striped north of downtown in the vicinity of the Vergennes Redemption Center, however the striping is no longer present. Rectangular Rapid Flashing Beacons (RRFBs) are installed at each of the non-signalized crosswalk locations (illustrated in Figure 4-9), except for the crossing at Canal Street, however advance warning signage for these crosswalks is not present. MUTCD-compliant pedestrian signals are installed at each of the signalized intersections within Vergennes. A notable sidewalk gap exists on Route 22A southbound between MacDonough Drive and Canal Street. However, a significant portion

[10] Continental crosswalks are the most deployed high-visibility crosswalk type (see Figure 4-10 for guidance from 2009 MUTCD on common crosswalk markings). Continental style crosswalks are the VTrans standard followed by many municipalities throughout the state.

of that gap From MacDonough Drive to the bridge is projected to be constructed in Fall 2022. A sidewalk is provided on Route 22A northbound within this segment.

Vergennes and VTrans used a recent class 1 paving project to add many of the pedestrian improvements discussed above to address safety concerns raised in the previous corridor study. Further improvements addressing the truck traffic in this corridor will significantly enhance the existing pedestrian amenities.

Downtown Vergennes is at the crossroads of several informal bicycle routes identified by the Vermont Department of Tourism and Marketing, including those extending south on Green Street and Maple Street and those extending north and east on Panton Road, McDonough Drive, and Comfort Hill Street. These routes intersect on Route 22A, which provides the only connection across Otter Creek. Shared-Lane markings are present throughout the Route 22A corridor, reinforcing the potential presence of cyclists along this route. Vergennes is also located within the Lake Champlain Byway, indicative of the significant draw for recreational trips into or through the area.

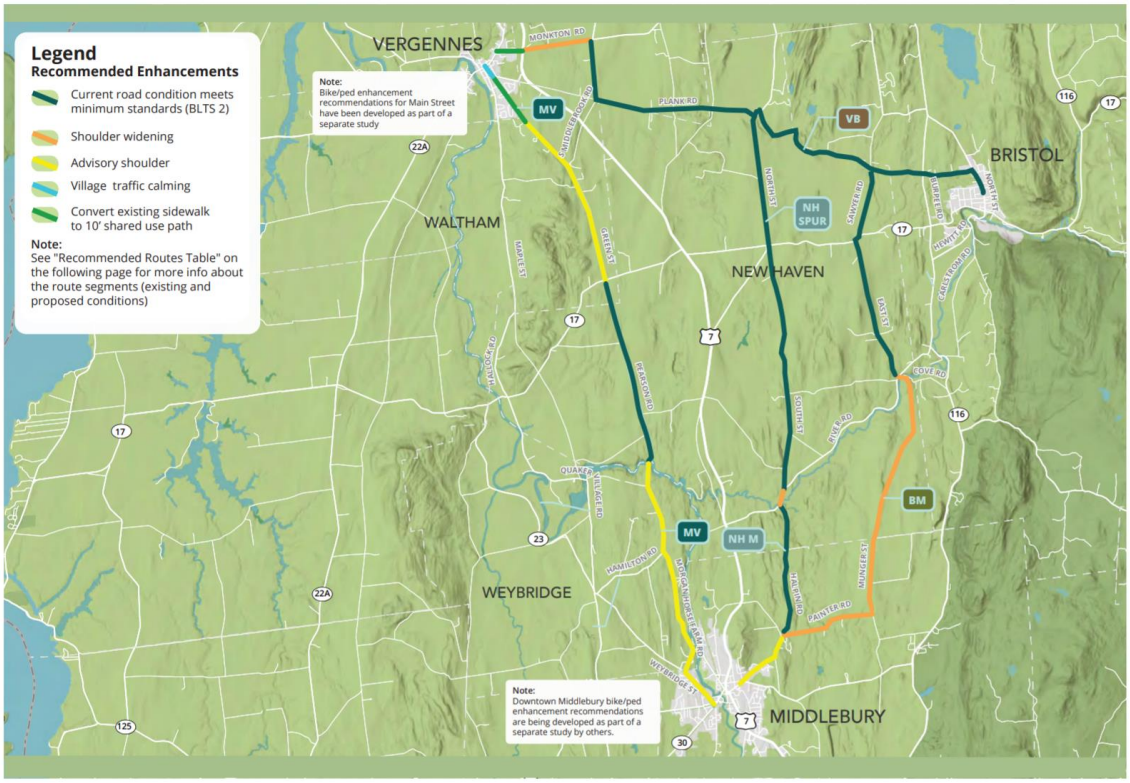
Priority levels for bicycle improvements on state roads were determined based on the 2016 VTrans On Road Bicycle Plan[11]. As illustrated in Figure 4-11, the segment of Route 22A though this corridor is designated as a High Priority bicycle corridor, highlighting the importance of this mobility option. A high priority roadway indicates current or potential bicycle use based on surrounding land uses and stakeholder outreach. However, currently, Vergennes tries to route bicycles from Route 22A through downtown to improve safety and reduce their conflicts with the existing truck traffic. Improving the impacts of truck traffic in this corridor will enhance the use of this important bike route. Outreach completed as part of the Vergennes PEL Study indicated that the Walk Bike Council of Addison County is actively working to advance the Triangle Bike Loop, linking Vergennes, Bristol, and Middlebury, illustrated in Figure 4-12.

[11] On-Road Bicycle Plan, VTrans (2016): https://vtrans.vermont.gov/planning/bikeplan

Figure 4-11: Bicycle Corridor Priorities within Vergennes

Source: VTrans Mapping Unit, 2020- Vermont Open Data Portal

Figure 4-12: Triangle Bike Loop



Source: Triangle Bike Loop Master Plan, Walk-Bike Council of Addison County.

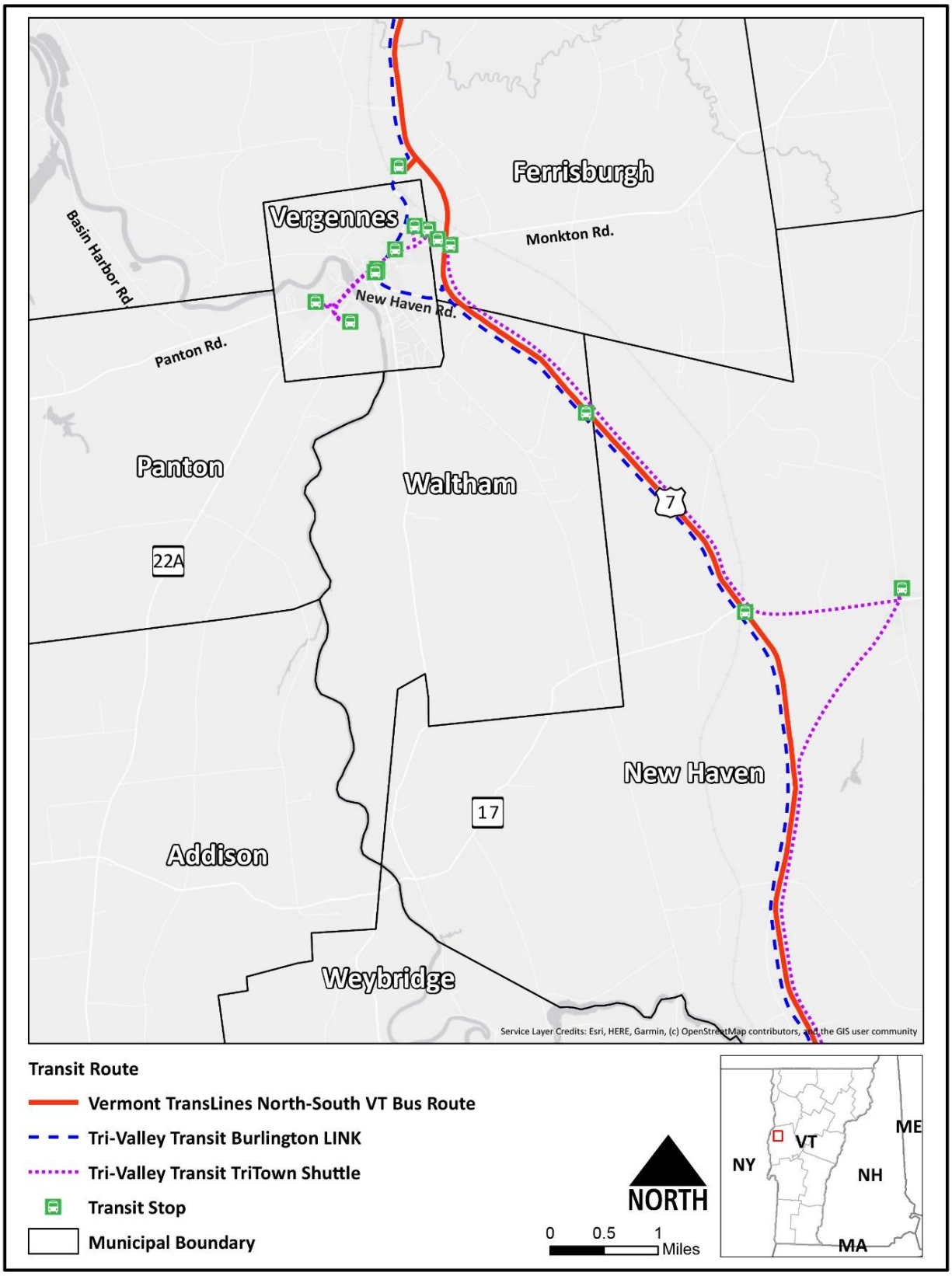
Transit Access

Multimodal accessibility, including access to transit, is a key element for mobility within a transportation network. In the City of Vergennes, Tri-Valley Transit and Vermont Translines provide regional mobility options, illustrated in .

Figure 4-13. Tri-Valley Transit operates the Burlington LINK (Route 1429) and the TriTown Shuttle (Route 1439). The Burlington LINK primarily provides service along the U.S. Route 7 corridor but deviates through downtown Vergennes via Route 22A including stops at the Ferrisburgh/ Vergennes Park and Ride Lot and the Vergennes Opera House. The Vergennes branch of the TriTown Shuttle originates and culminates in the Town of Middlebury but provides local service within the City of Vergennes.

A third route is operated by Vermont Translines, providing twice daily (north and southbound) regional bus service along the U.S. Route 7 corridor between Milton, VT and Albany, NY, with connections to local bus services and Amtrak rail service. This route includes a stop at the Ferrisburgh-Vergennes Park & Ride, located south of the intersection of Route 22A and U.S. Route 7. Figure 4-13 details the transit network within the PEL study area.

Figure 4-13: Transit Network – Study Area



Source: State of Vermont – Vermont Open Data Portal

Ridership data (FY 2019) for the four bus stops within the project corridor was provided by Tri-Valley Transit. As illustrated in Table 4-3, transit utilization within the study area is highest at the three Tri-Town (Route 1439) stops within downtown Vergennes, where annual ridership exceeds 1,000 users.

Table 4-3: Tri-Valley Annual Ridership, 2019

STOP NAME	LOCATION	BURLINGTON LINK (SATURDAY ONLY)	TRI-TOWN VERGENNES	TOTAL
Ferrisburgh Park & Ride	572 VT-22A, Ferrisburgh, VT 05456	21	Not served	21
Vergennes Opera House	120 Main St, Vergennes, VT 05491	67	1332	1399
Vergennes Green Street	VT 22A at Green Street/Park Street	82	2182	2264
Vergennes John Graham Shelter	VT 22A at Monkton Road	Not served	1453	1453

Source: Tri-Valley Transit

Anecdotal information provided as part of the Vergennes PEL Study outreach process indicated that a major concern for Tri-Valley Transit is the cleanliness of its shelters within Vergennes. During the Mobility Focus Group, it was noted that the shelter installed on Green Street adjacent to the signalized intersection with Route 22A is the "dirtiest shelter in their system" due to soot and pollutants that collect on shelter surfaces. An additional concern shared as part of the Mobility Focus Group indicated that stopped buses in front of the Vergennes Opera House have trouble rejoining traffic during peak periods. Truck traffic may be a contributor to these concerns.

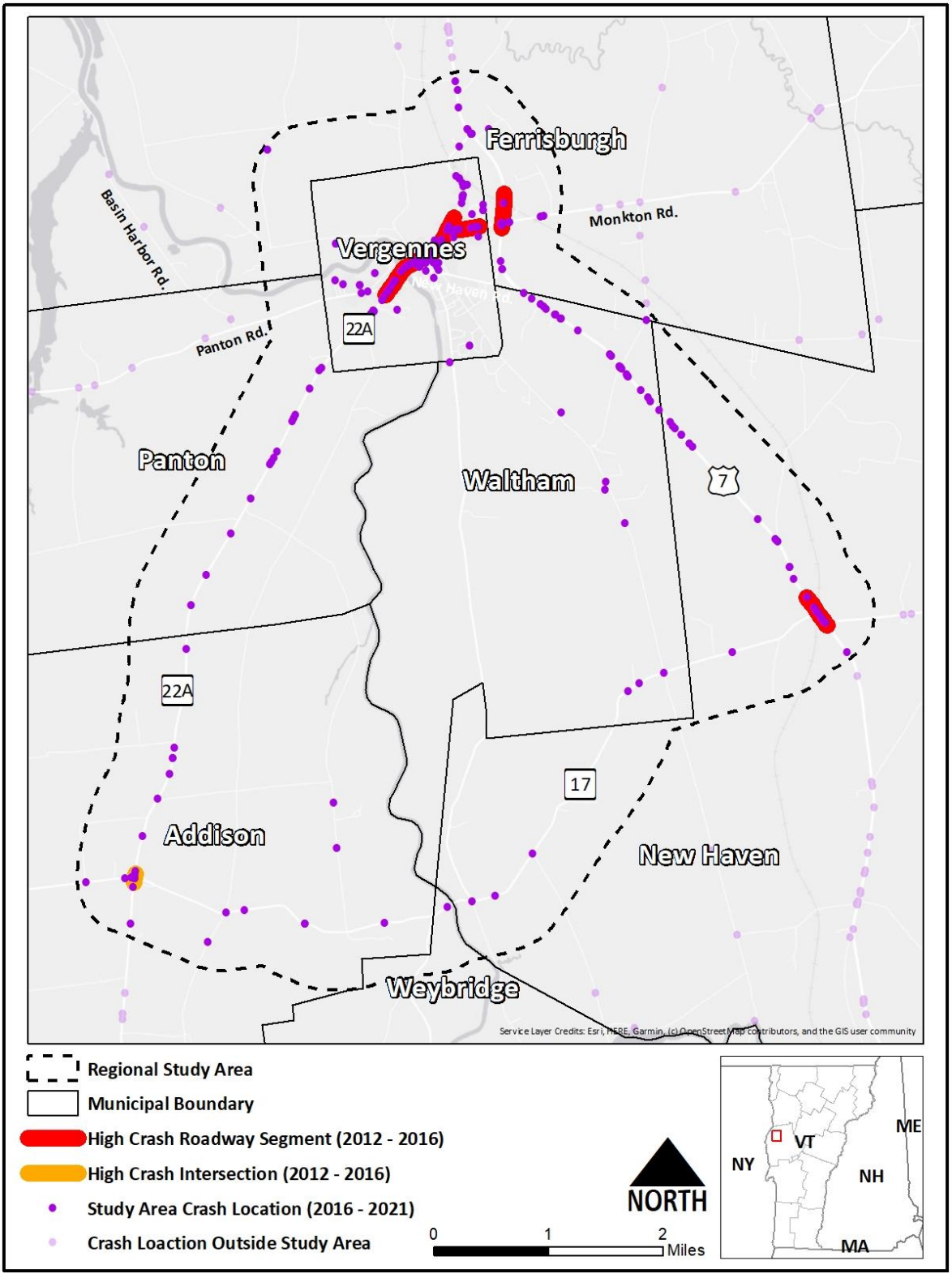
4.2.2 Safety and Traffic Circulation

In addition to understanding how different travel modes traverse the study corridor, a detailed understanding of how frequently and where travelers along the Route 22A corridor are most vulnerable will help define where improvements are most critical.

Crash data were obtained from VTrans for the time between July 2016 and July 2021.[12] Crash data, shown in Table 4-4, highlights several roadway segments within the study limits that have been identified as high crash roadway segments between the years of 2012 and 2016. In addition to these roadway segments, VTrans data also identified the intersection of Routes 17 and 22A as a high crash location. Crash data for major roadways in the study area are shown in Figure 4-14, with a locally scaled graphic showing crashes within the City of Vergennes shown in Figure 4-15.

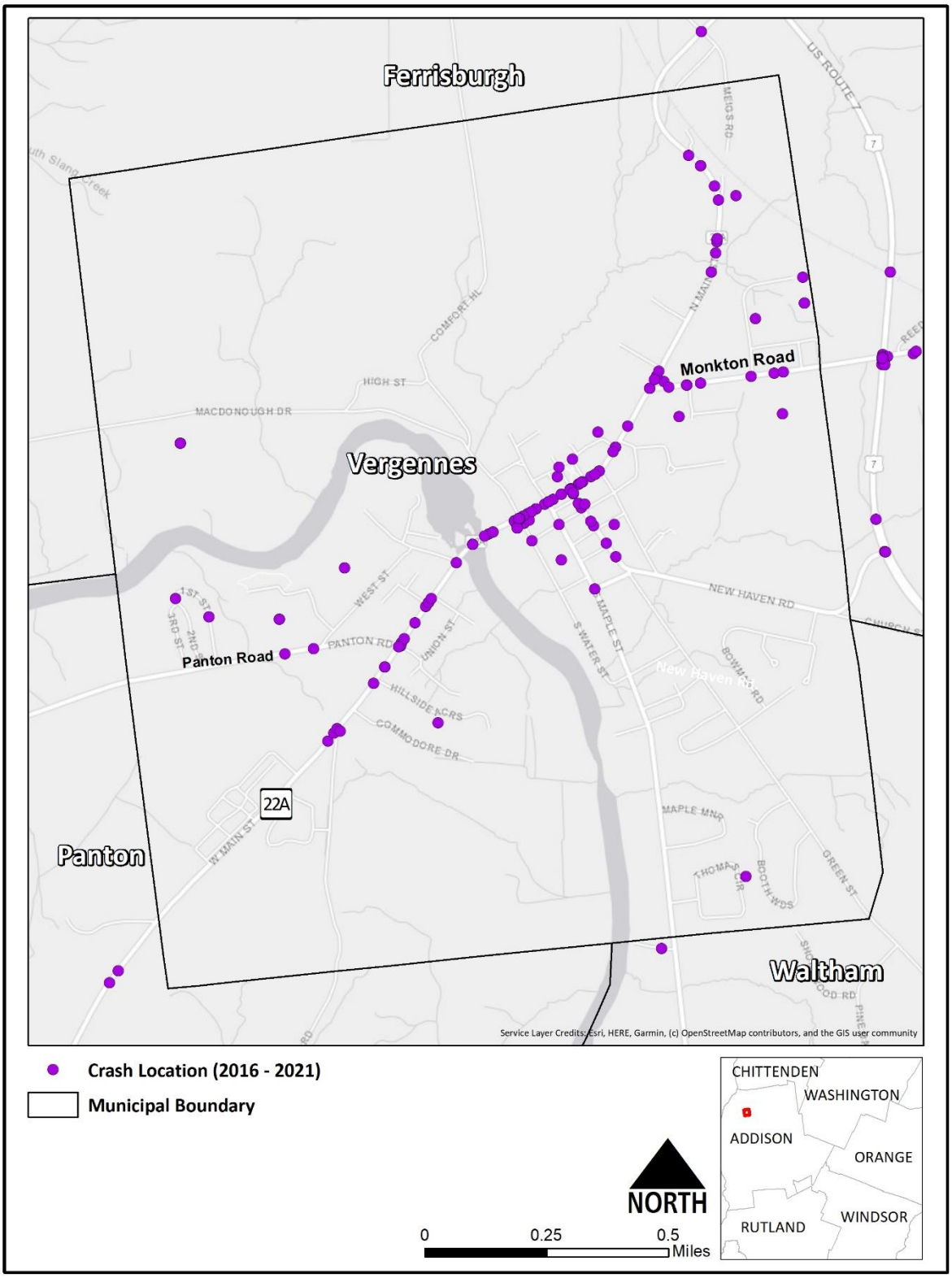
[12] Note that some reported crashes from early 2021 may not be present within the statewide database due to delays in processing and compiling of current data.

Figure 4-14: Crash Data – Study Area, 2016-2021



Source: Vermont Agency of Transportation

Figure 4-15: Crash Data – City of Vergennes, 2016-2021



Source: Vermont Agency of Transportation

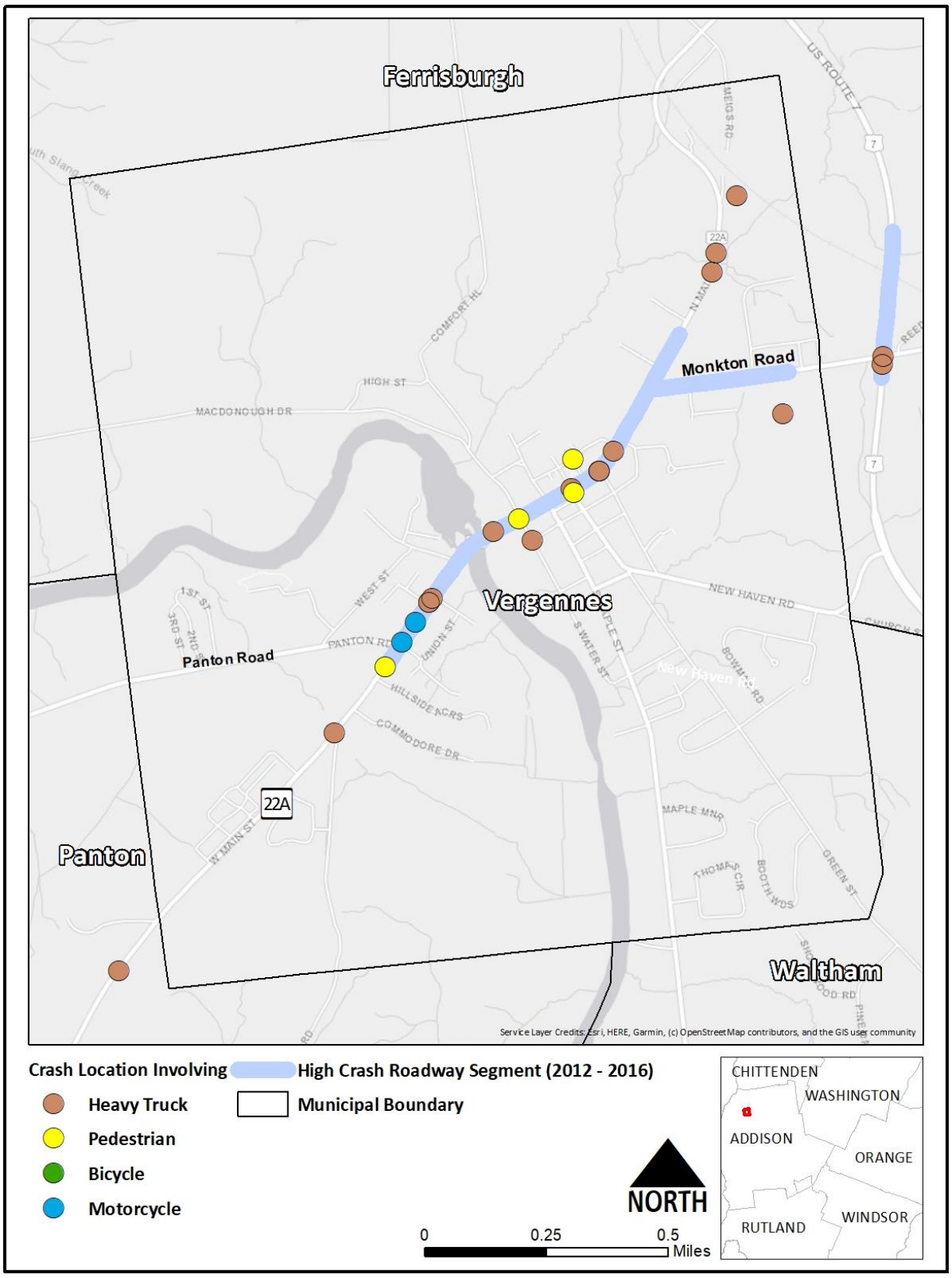
Table 4-4: High Crash Roadway Segments – Study Area, 2016-2021

SEGMENT	PRIMARY ROUTE	MILEPOSTS	AADT	CRASHES			INJURIES
				TOTAL	TRUCK	BIKE/PED	
West Main St. between Elm St. and the Otter Creek Bridge	State Route 22A	0.703 – 1.003	7,763	13	2	1	4
West Main St. between the Otter Creek Bridge and East St.	State Route 22A	1.003 – 1.303	10,862	43	3	1	1
West Main St. between East St. and Coventry Ln.	State Route 22A	1.303 – 1.603	9,834	13	2	0	1
Monkton Rd. between West Main St. and Crescent Dr.	Monkton Road	0.000 – 0.300	4,600	6	0	0	1
Ethan Allen Hwy. in proximity to Monkton Rd.	U.S. Route 7	0.603 – 0.903	7,354	10	2	0	7
Ethan Allen Hwy. north of Otter Creek Highway to south of Main St.	U.S. Route 7	5.323 – 5.623	7,876	12	0	1	4

Source: Vermont Agency of Transportation

While vehicle crashes are identified throughout the study area, the highest concentration of crashes is centered on Route 22A within downtown Vergennes, including incidents that involved 1) large trucks, 2) pedestrians, or 3) bicyclists. Figure 4-16 highlights crash clusters involving these three mobility types within Vergennes. Anecdotal input has identified that parking movements associated with angled parking slots within the downtown core may be a contributor to crashes within Vergennes due to visibility constraints associated with backing movements. Truck crash clusters are most notable at two locations: the downtown Core/vicinity of Green Street and the vicinity of the Kennedy Brothers commercial building, located north of downtown Vergennes.

Figure 4-16: Heavy Truck, Pedestrian, or Bicycle Crashes – City of Vergennes, 2016-2021



Source: Vermont Agency of Transportation

Finally, Route 22A across Otter Creek lacks redundancy, forcing substantial detours were major crash incidents or shutdowns to occur, as shown in Figure 4-17. Shutdown situations may also impact emergency response times given congestion associated with major incidents. Information provided by the Vermont Rescue Squad highlighted the reliance on Route 22A as the main access spine for emergency response within Vergennes. The lack of shoulders within downtown Vergennes can often make it challenging for vehicles to yield to emergency response personnel. This reinforces the need to reduce overall crash incidence, particularly those involving severe injuries or fatalities.

Figure 4-17: Traffic Disruptions on Route 22A

4.2.3 Quality of Life

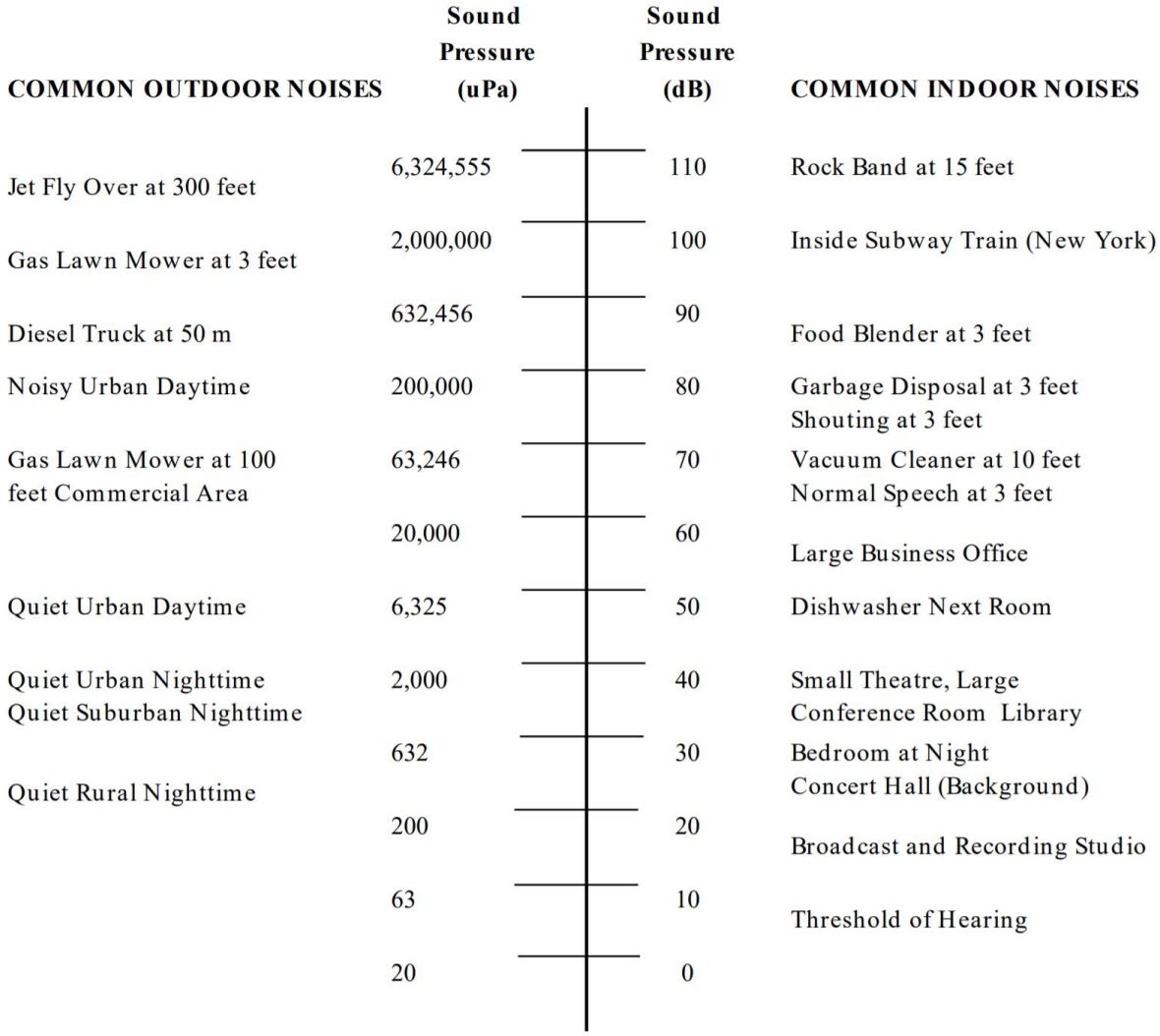
Trucks have a visible presence along Route 22A in Vergennes. While the corridor is a state highway, it bisects downtown Vergennes, a thriving commercial center supported primarily by tourism. In addition to impacting a visitor's experience, truck traffic impacts quality of life for residents by contributing to increased noise, vibration, and emissions. This section describes the existing quantitative noise and vibration monitoring performed as part of the Vergennes PEL Study, as well as a qualitative assessment of air quality effects related to traffic. In addition, as long-term solutions are identified, equity will need to be considered to ensure impacts are EJ populations are not disproportional.

Noise and Vibration

As described in section 3.7.2, noise and vibration measurements were collected in November 2021 to document existing (baseline) noise and vibration levels affecting two receptor locations on Main Street– the Vergennes Opera House (between North Street and Water Street) and the Black Sheep Bistro (between S Maple Street and S Water Street). The primary sources of noise and vibration at these locations involves large trucks making use of Main Street directly through town. Main Street lies along a steep hill going through downtown. Trucks (and all vehicles) must accelerate to get up the steep hill, which includes a traffic light mid-way up the hill. Trucks also use their engine brakes (Jake brakes) to control speed going down the steep hill. As per the FHWA's P*rocedures for Abatement of Highway Traffic and Construction Noise*, *23 CFR 772*[13], highway traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources, such as traffic, that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear. The A--weighting refers to the amplification or attenuation of the different frequencies of the sound (subjectively, the pitch) to correspond to the way the human ear "hears" these frequencies. Generally, when the sound level exceeds the mid-60 dBA range, outdoor conversation in normal tones at a distance of three feet (0.9 meters) becomes difficult. A 9-10 dB increase in sound level is typically judged to be twice as loud as the original sound, while a 9-10 dB reduction is half as loud. Doubling the number of sources (i.e., vehicles) increases the hourly equivalent sound level (Leq) by approximately 3 dB, which is usually the smallest change that people can detect without specifically listening for the change. Figure 4-18 shows some common indoor and outdoor sound levels.

[13] Procedures for the Abatement of Highway Traffic and Construction Noise: https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0772.htm

Figure 4-18: Common Sound Levels



Source: Federal Highway Administration

Noise Criteria

Noise criteria for avoiding human annoyance were adopted from the FHWA and their Noise Abatement Criteria (NAC) procedures used when analyzing traffic noise in the planning and design of highways. The noise abatement criteria and procedures are set forth in 23 CFR Part 772. In addition, the Vermont Agency of Transportation (VTrans) Traffic Noise Policy (2018) establishes the state's official policy on highway noise and abatement. This policy describes VTrans process that is used in determining traffic noise impacts, construction noise impacts and abatement measures, and the equitable and cost-effective expenditure of public funds for traffic noise abatement. Where the FHWA has given state highway agencies flexibility in implementing the 23 CFR 772 standards, this policy describes VTrans approach and definitions.

Traffic noise impacts are defined to occur if (1) traffic noise levels "approach or exceed" the FHWA Noise Abatement Criteria (NAC) or if (2) traffic noise levels represent a "substantial increase" over existing noise levels. VTrans defines "approach" as noise levels within 1 decibel (dBA) of the NAC. An impact that represents a "substantial increase" is based on a comparison of the base year noise level with respect to a predicted increase in noise levels in the design year of 15 dBA or greater. The FHWA's noise criteria is based on the loudest one-hour average, and individual truck passby events are averaged into the Leq(h).

Being an auditorium and a public meeting house, the Vergennes Opera House has a traffic noise criteria limit of 76 dBA applied outside the building (which assumes a standard 25 decibel reduction for noise infiltrating into the building). Similarly, being a restaurant, the Black Sheep Bistro has a traffic noise criteria limit of 71 dBA applied outside the building.

Vibration Criteria

Vibration criteria for avoiding human annoyance and for avoiding damages to nearby buildings were adopted from current Federal Transit Administration (FTA) policy as described in their Transit Noise and Vibration Impact Assessment Manual (2018).

FTA's vibration criteria limits are intended to avoid human annoyance in buildings and other structures based on the maximum vibration level expected from a single worst-case vibration event regardless of its time of day. The vibration criteria are provided as absolute limits, meaning they are not dependent on existing vibration conditions.

The Vergennes Opera House is an institutional land-use (FTA Category 3), with a human annoyance vibration criteria limit of 75 vibration velocity (VdB). Also, being built with an engineered concrete foundation (FTA Structural Category II), the Vergennes Opera House has a building damage vibration criteria limit of 0.700 inches/second for transient (truck passby) sources. Similarly, the Black Sheep Bistro is also an institutional land-use (FTA Category 3) with a human annoyance vibration criteria limit of 75 VdB. And being built with a non-engineered (assumed worst-case) concrete foundation (FTA Structural Category III), the Black Sheep Bistro has a PPV building damage vibration criteria of limit of 0.500 inches/second for transient (truck passby) sources.

Results

The results of the noise and vibration analysis indicate that existing noise levels are below FHWA/VTrans criteria guidelines at the Vergennes Opera House, but marginally exceed the noise criteria limits at the Black Sheep Bistro. Existing vibration levels are possibly feelable in accordance with FTA human annoyance guidelines, but there is little to no chance that existing vibration levels might be damaging the building structures.

Air Quality and Greenhouse Gas Emissions

As reported in the ACRPC 2018 Regional Plan, motor vehicles are the largest source (about 65%) of ozone-forming pollutants in Vermont. Transportation also represents the largest source of Vermont's greenhouse gas emissions (57 percent) and is the largest user of energy by sector (33 percent). The Vermont Department of Health and Department of Environmental Conversation have partnered to conduct the Vermont Environmental Public Health Tracking effort to "better understand how environmental hazards can contribute to certain illnesses". While the program did not provide specific air quality data for Addison County, it did underscore that "most toxic air pollutants in Vermont come from mobile sources such as cars, trucks, and other motorized vehicles". Similarly, the 2040 Vermont Long-Range Transportation Plan indicates that by its estimate the transportation sector is the largest generator of greenhouse gases in Vermont, accounting for 45% of all greenhouse gas emissions statewide. It is widely known that idling vehicles are a major source of pollutants that are known to have adverse health effects on nearby populations. Of particular importance is fine particulate matter ($PM_{2.5}$), particulate matter (PM_{10}), and Nitrogen Dioxide (NO_2). These pollutants are known causes of significant health problems, particularly respiratory diseases in children and the elderly, including asthma.

As mentioned previously, traffic is a concern of residents within Vergennes, with increased levels of traffic causing additional vehicle idling, which in turn leads to increased emissions within the downtown corridor. Similarly, large trucks traveling through the area are major generators of pollutants. In fact, as noted in section 3, anecdotal accounts have noted that one of the dirtiest bus stop shelters in the Tri-Valley Transit system, in terms of the accumulation of airborne particulate matter, is located in Vergennes, along Route 22A.

Equity

Per FHWA guidance, considering equity early and often through methods such as public participation and data collection and analysis improves the planning process's ability to adequately respond to the needs of the community it serves. It may also improve project delivery by preventing costly and time-consuming delays that could arise from previously unrecognized conflicts as projects move from planning into implementation. An equitable transportation plan considers the circumstances impacting a community's mobility and connectivity needs, and this information is used to determine the measures needed to develop an equitable transportation network. As such, the Vergennes PEL Study will ensure marginalized, disadvantaged, underserved and underrepresented people and communities are not disproportionately burdened by future transportation alternatives and utilize planning, public involvement, and implementation techniques that provide thoughtful and meaningful opportunity for participation for all.

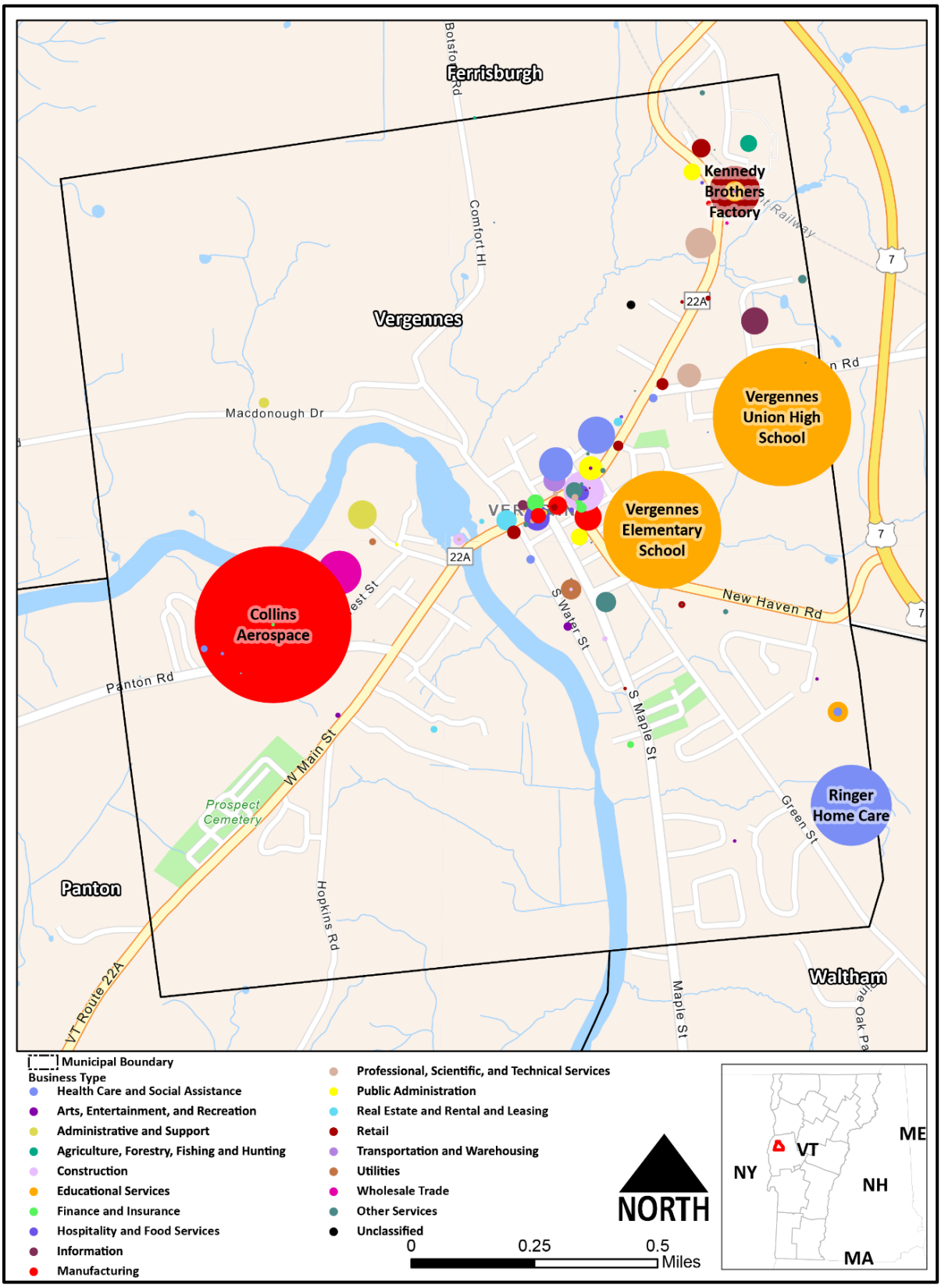
4.2.4 Economic Vitality

The City of Vergennes has historically had an adaptive economy that has mirrored regional and global shifts, from its origins in manufacturing and trading, to 19th and 20th Century industrial growth, with a current focus primarily on retail and service businesses. Earlier sections of this document have reinforced the importance of the downtown corridor within Vergennes as a local and regional economic engine.

Within the City there are 164 businesses according to Esri's *Business Locator*[14], the majority of which are small businesses concentrated in the historic downtown area along Main Street/22A. Larger employers include a supermarket and the most notable employer, Collins Aerospace. Collins Aerospace employs approximately 850 engineers, technicians, and analysts within their manufacturing plant located on Panton Road, approximately 1,000 feet west of Route 22A. Figure 4-19 presents the number of employees per employer in Vergennes.

[14] Esri extracts its business data from a comprehensive list of businesses licensed from Data Axle®.

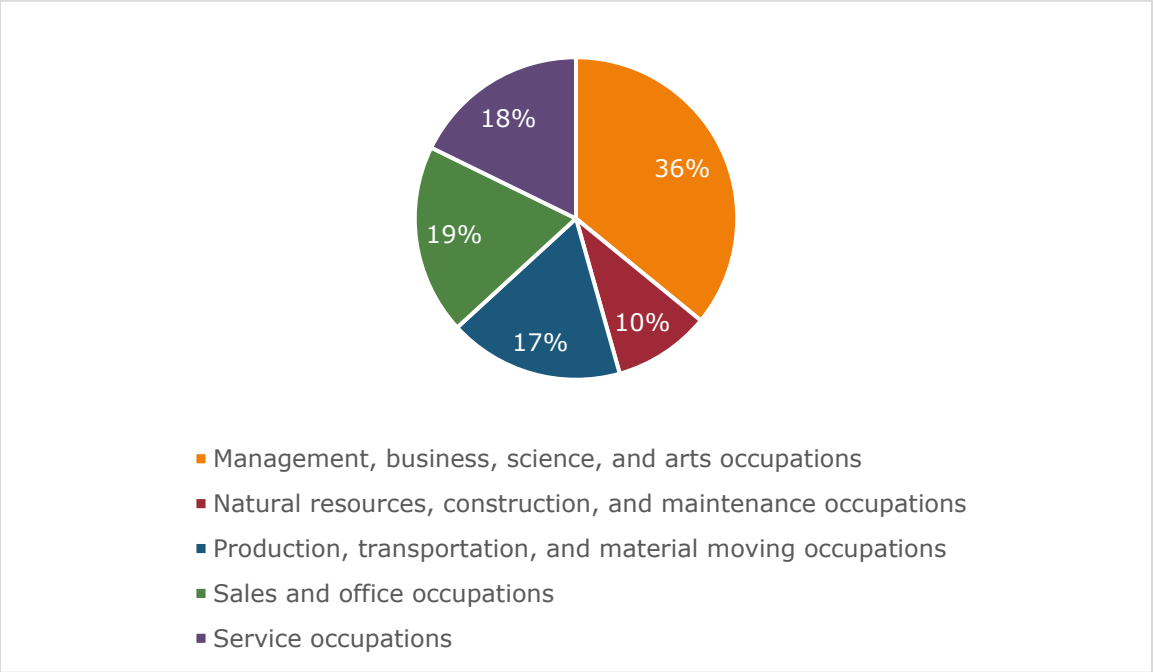
Figure 4-19: Employers within Vergennes



Source: Esri's Business Locations extracted from Data Axle, July 2021

The workforce within the City of Vergennes is mostly regional as the ACS reports 61% of the residential population of Vergennes's works within Addison County according to 2019 estimates. Figure 4-20 presents the occupations of Vergennes residents, which consists of mostly professional services, primarily in Management, Business, Science, and Arts Occupations (36%), followed by Sales and Office occupations (19%) and Service workers (18%).

Figure 4-20: Occupations of Vergennes Residents



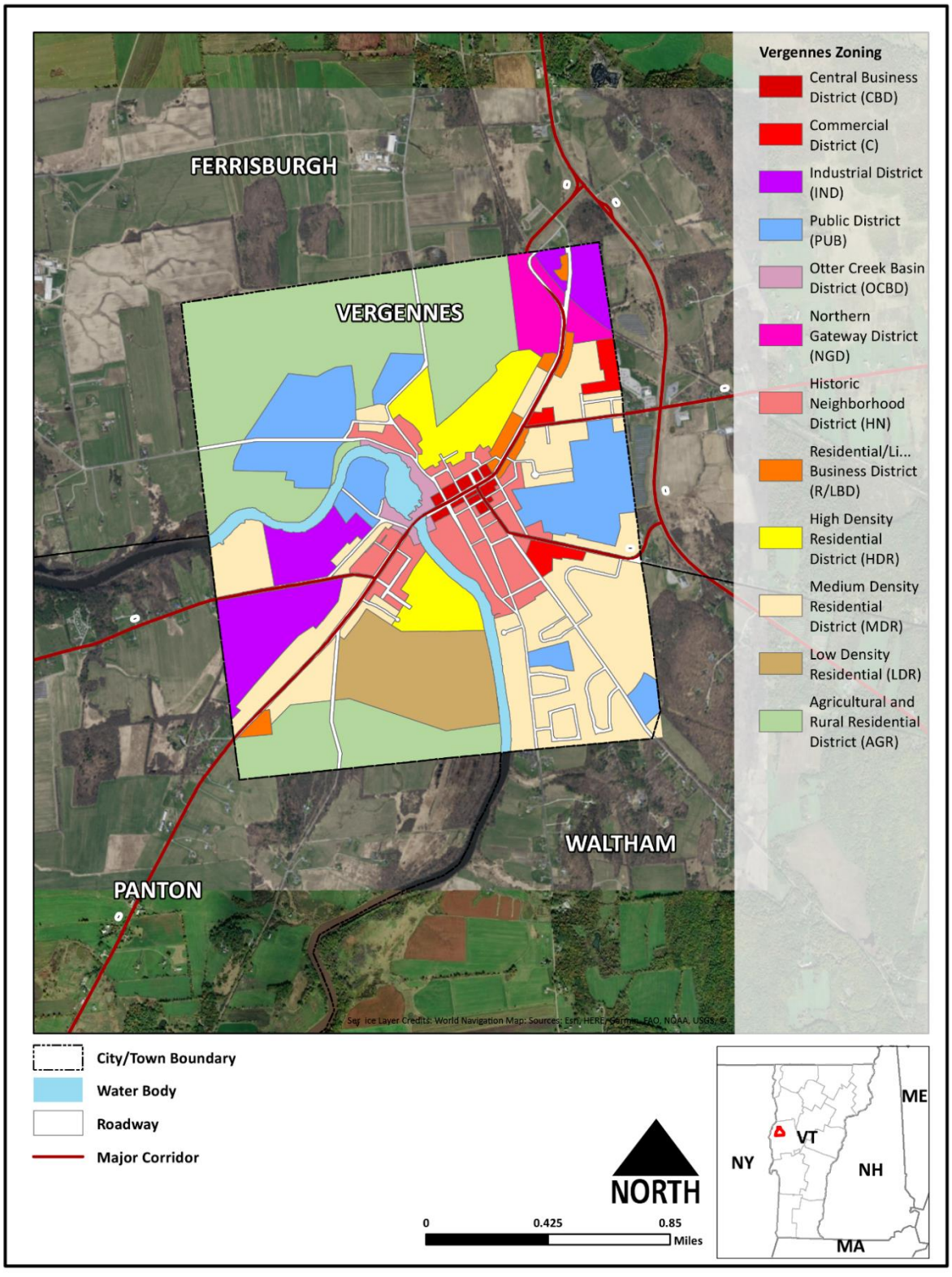
Source: U.S. Census Bureau, *Data Set ACSDP5Y2019*, 2015-2019 American Community Survey 5-Year Estimates

From a regional perspective, agriculture is a driving economic and cultural force in the study area and plays an important role in land-use, social, and community patterns. As reported in the ACRPC 2018 Regional Plan, Addison County is a hub for dairy and dairy processing, apples and apple-processing, grains, meat production and processing, vegetable production and a producer of beer, wine, cheeses, bread, honey and maple syrup.

4.2.5 Land Use

Land uses have a direct impact on the adjacent and regional transportation network. Understanding current and future land uses within and surrounding the study area is an important element of this study. Existing City of Vergennes land use patterns support a variety of uses and densities, while preserving a balance of development and open space. Figure 4-21 presents the existing zoning in Vergennes. Agricultural and industrial land uses make up the perimeter of the city and the uses become denser approaching the center of Vergennes, which is predominantly commercial. The Central Business District is the core of downtown Vergennes.

Figure 4-21: Existing Zoning in Vergennes



Source: Addison County Regional Planning Commission, 2019 Vergennes Zoning

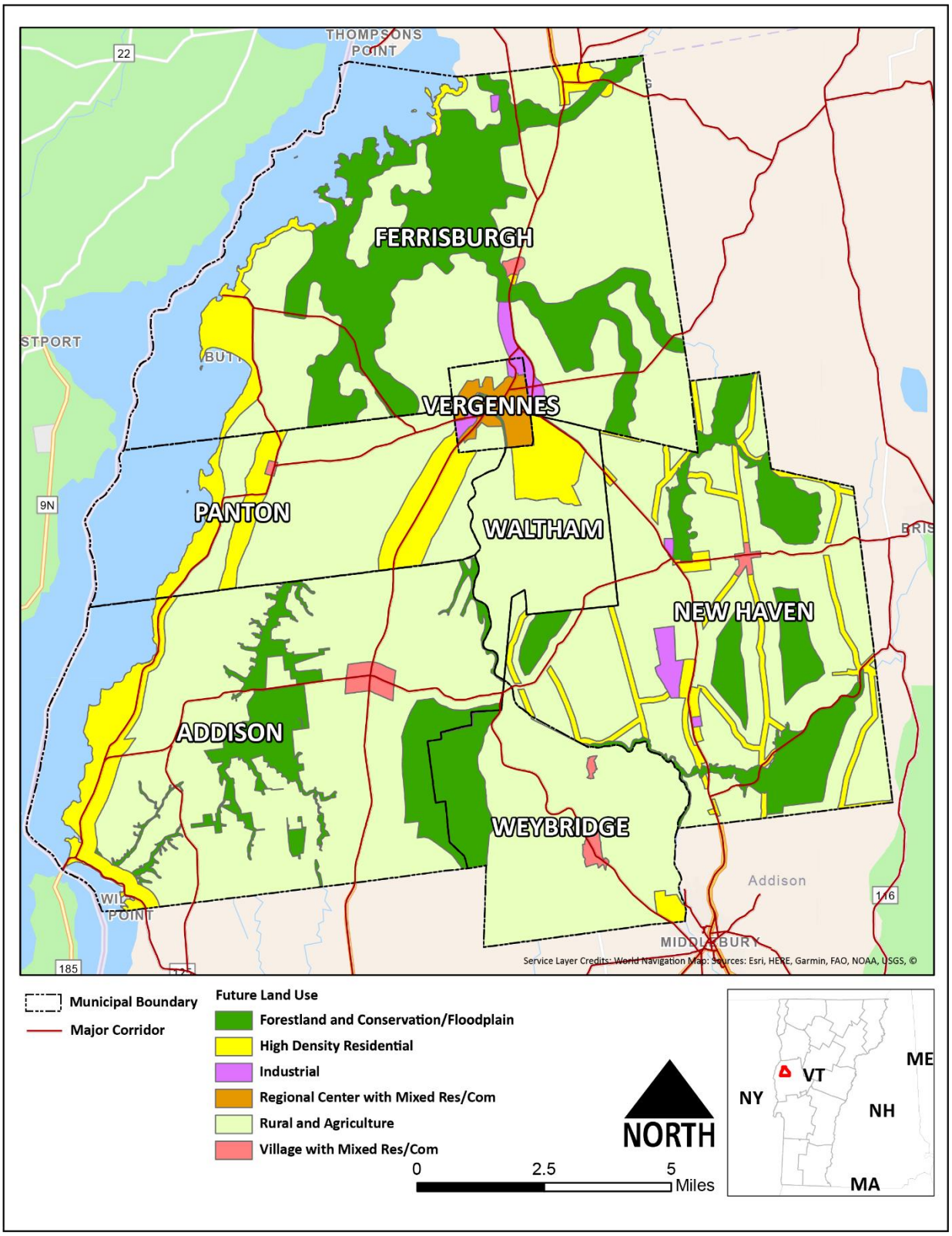
The 2020 Vergennes Municipal Plan defined future land use goals and principles to retain the City's character and encourage growth. Primary areas for future development include converting all current Agricultural and Rural Residential Districts to Low Density Residential to enhance housing opportunities. Additionally, there is interest in expanding the Route 22A Economic Corridor with development and redevelopment that maintains the look and feel of the historic downtown while increasing retail, commercial, and service businesses. Figure 4-22 presents ACRPC's Regional Future Land Use Map from the Regional Plan, which constitutes a general composite of municipally adopted plans.[15]

The Regional Plan encourages protection of the region's agricultural resources for their economic and cultural values and benefits. The plan also supports land management practices that minimize agriculture's potential negative impacts to other resources including but not limited to soils, surface and ground water quality, and wildlife habitat.

Integrating land uses will be a key element of the PEL study. Kick off meetings will be held with Planning Commissions in the key stakeholder communities to begin the process of developing a vision within each community. As part of this process, the team will conduct a brief discovery process that will allow for the identification of any key stakeholder groups that should be directly involved. Visioning sessions will be held in each stakeholder municipality to introduce the broader community to the study and provide an opportunity for them to communicate their land use visions. The input gleaned from these sessions will be used to inform the development of each community's preferred land use scenario, which will ultimately be compiled into a cohesive land use vision for the corridor.

[15] VT DATA - ACRPC (Addison County Regional Planning Commission) Future Land Use Plan | Vermont Open Geodata Portal Your source for geospatial data

Figure 4-22: Future Land Use



Source: Addison County Regional Planning Commission, 2018 Future Land Use Plan

4.3 SUMMARY

The purpose and need statement is an important component within the PEL process. It defines the overall theme for the effort, defining the problem (purpose) and supporting elements that confirm the existence of the problem (needs). The purpose and need statement defined within this study expands upon the purpose and need statement defined through previous work, reflecting recently collected insights and analyses. Five key needs have been identified, each of which supports the desire to reduce impacts of truck traffic along Route 22A, particularly in downtown Vergennes. These needs include:

- Mobility and Access – Maintaining freight throughput while balancing the needs of all users.
- Safety, Circulation, and Resilience – Promote safety improvements and identify opportunities to positively impact emergency response and redundancy.
- Quality of Life – Reduce negative externalities associated with truck traffic, including noise, vibration, and emissions.
- Economic Vitality – Promote economic activity, including support for regional agriculture.
- Land Use – Support local and regional land use plans.

5. Next Steps

Consistent with the provisions of both Title 23 United States Code (U.S.C.) Section 139(f)(4)(E) and 23 U.S.C. 168, VTrans intends to use information and decisions developed in the Vergennes PEL Study (such as the purpose and need statement, environmental resource impacts that are potentially moderate or severe, and the screening of alternatives) to be carried forward into future environmental reviews under NEPA. Portions of the Vergennes PEL Study are intended to be adopted or incorporated by reference into the NEPA documentation for project(s) resulting from this study. While final conclusions for alternatives are made during the NEPA process, by following the PEL approach, the Vergennes PEL Study can narrow the range of alternatives by identifying those that are not feasible (i.e., those that have fatal flaws) or do not meet the purpose and need for the project.

The purpose and need statement outlined in this document will be used to identify an initial long list of alternatives, including potential alternatives from previous studies, concepts suggested by the public in prior outreach efforts, and public/agency suggestions on alternatives for the current study. The initial alternatives will be screened by criteria to be developed through an open and transparent public process to a short list of alternatives that will be developed in further detail. Two agency concurrence points have been identified – the purpose and need statement and the screening of the initial alternatives. The alternatives development and screening process during this PEL study will help identify recommended and feasible options, which can move forward to conceptual design ahead of initiating a NEPA review. Figure 5-1 outlines the Vergennes PEL Study schedule and remaining tasks and outreach activities including public workshops and land use visioning (as outlined in section 4.2.5).

Figure 5-1: PEL Study Schedule